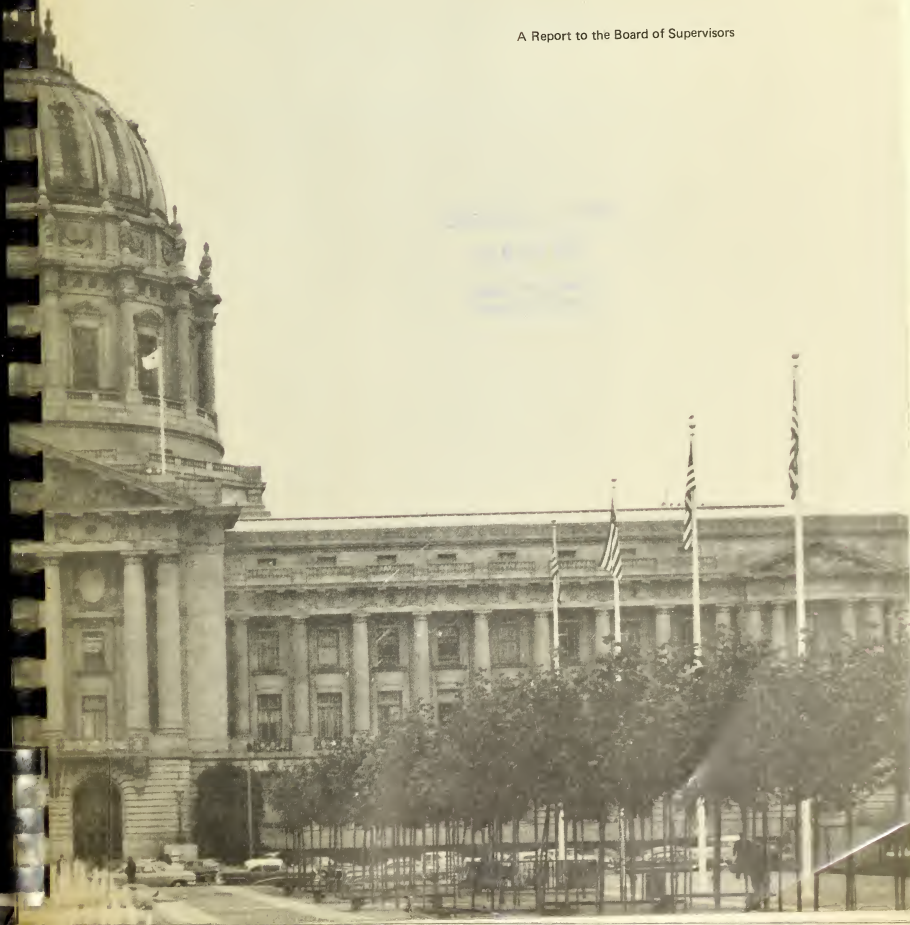


Data Processing in San Francisco

1971

A Report to the Board of Supervisors





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INTRODUCTION

"Progress, therefore, is not an accident, but a necessity ... It is a part of nature."--- Herbert Spencer in Social Statics.

Progress in the art of government takes many forms, it is evidenced in the services supplied to its citizens, and in the collection and disbursement of revenues to support these services.

In keeping with San Francisco's reputation for leadership and innovation, it established several years ago a centralized data processing center to handle the burgeoning record-keeping tasks fundamental to these increased services. That decision has proven to be a wise one. In the last few months alone, the center successfully counted the votes in the June and November elections. While other counties ran into difficulties, San Francisco's vote counting system ran "with military precision" to quote "The Chronicle". During July, the entire city payroll of 26,000 employees was smoothly and quietly changed to a bi-weekly basis, and in December a special effort put paychecks in the hands of employees before Christmas instead of afterwards as the schedule indicated.

On the subsequent pages of this report are shown the myriad of other activities in which data processing is engaged throughout the city and county, together with plans for its future use in the dynamic areas of law enforcement, courts, and hospitals.

Over 100 terminal devices located throughout the city are connected to the data processing center's computers at city hall via telephone lines on a 24-hour, 7 days-a-week basis because the demand for services never stops.



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The sophisticated design of this teleprocessing system which enables the assessor to correct a record, the hospital to admit a patient, the police to search for a name, and the tax collector to print a bill at terminals in their respective departments, simultaneously, has attracted nearly 400 professional data processing visitors from all over the world during the past two years.

There is much more to be done and the data processing staff together with the departments they serve are constantly striving for a better way.

San Francisco E.D.P. attracted 398 visitors during 1969-1970



Japan	50	California	81	Colorado	11	Massachusetts	4	Denmark	6
Thailand	1	Nevada	6	Louisiana	2	New Hampshire	7	England	34
Singapore	2	Idaho	5	Pennsylvania	11	Connecticut	2	Scotland	3
Philippines	1	Iowa	6	Washington D.C.	6	New Jersey	6	Germany	9
Australia	1	Ohio	2	Missouri	8	Florida	3	Austria	3
New Zealand	1	Utah	2	Virginia	3	Alabama	2	France	9
Hawaii	2	South Dakota	1	Texas	6	Costa Rica	2	Italy	11
Alaska	4	Illinois	12	Georgia	1	Venezuela	2	Yugoslavia	2
Oregon	35	Minnesota	4	Maryland	3	Sweden	20	Spain	1
				New York	5				



1978年10月1日

Financial Information System

City and County of San Francisco

The company-wide computer network: How to get it before it gets you.

You didn't expect to get all tied up when you set out to computer-link your company. But it happens too often. Too much of your computer's capacity gets tied up in communications. And you're still locked into a particular line of terminals based solely on their compatibility with your main computer. The result is an inefficient system that's unresponsive to your firm's real needs. We'll tell you right now, there's another way that not only costs less but completely handles the data communications of a company-wide computer network. Economically and inventively. And with the operation of your computer. It's through the Comtel family of computers, a breakthrough in the field. Besides giving you new freedom

on a sensible cost/performance basis, a Comtel System can almost double your computer's available processing capacity and eliminate costly and ineffective conventional termination equipment. In fact, a Comtel System with peripherals can free your computer from its burdensome communications tasks, altogether. And at lower cost. But don't take our word for it. Ask some of the people we've helped. Like Trans World Airlines, Alcoa and the City and County of San Francisco—who chose Comtel to handle their communications processing. Or Information Network Corporation and Computer Network Corporation—two time-sharing companies who installed Comtel Systems to relieve their computer's communications overload. They checked out the alternatives and then chose Comtel. Why not find out what they found out—what Comtel can do for you that other systems and other firms, can't. Call or write us. Tell us about your present computer set-up and your goals. Then we'll arrange a meeting to see how Comtel can help you wherever you need help. Comtel, Inc., Two Research Court, Rockville, Md. 20850. Phone (301) 948-8700.

IBM

San Francisco's data processing system has been featured in many nationally distributed publications.

GOVERNMENT EXECUTIVE

April 1970

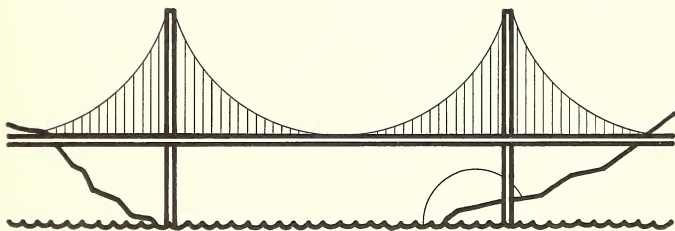
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Warrants

Annually the computer at City Hall produces 1,988,400 warrants--
a stack 358 feet higher than the Golden Gate Bridge

TODAY IN SAN FRANCISCO
DATA PROCESSING

CURRENT PROJECTS



WATER DEPARTMENT

Meter reader Anthony Kivlen and programmer Georgia Campbell compare his field book reading to consumer's water bill, printed on computer for one of 170,000 accounts.



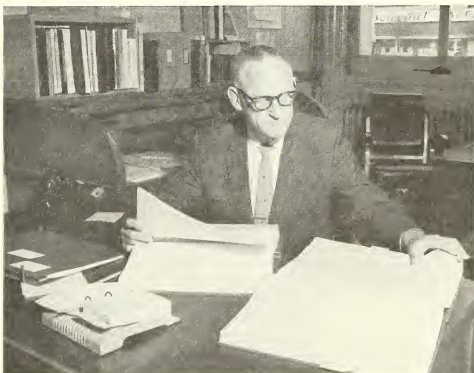
SUPERIOR COURT

Ralph Sheehan, grand jury consultant, showing Judge Raymond Arata how optical scanner reads juror lists typed by Margaret Lundborg.



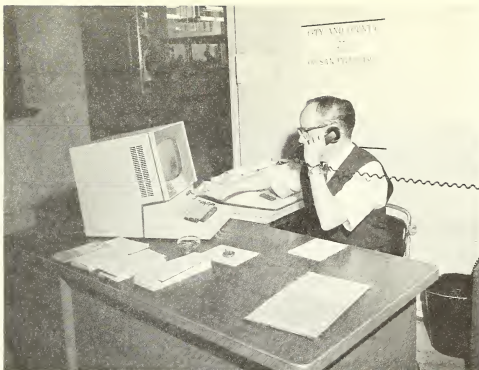
ASSESSOR

The Assessor's Technical Services Group using terminals to update directly some of the 154,000 records in the Secured Property File.



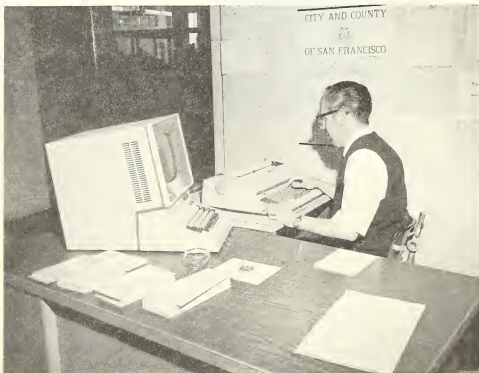
REGISTRAR OF VOTERS

Frank Quinn, Chief Deputy Registrar, comparing vote count by precinct for November 3, 1970 general election with the number of registered voters. Both reports are by-products of the election night computerized vote information system.



TAX COLLECTOR

James Daly, senior clerk at real estate tax bill counter, answers taxpayer's telephone inquiry in 2 seconds using computer terminal in Tax Collector's Office.



TAX COLLECTOR

James Daly, requests computer terminal to print duplicate tax bill while taxpayer waits.



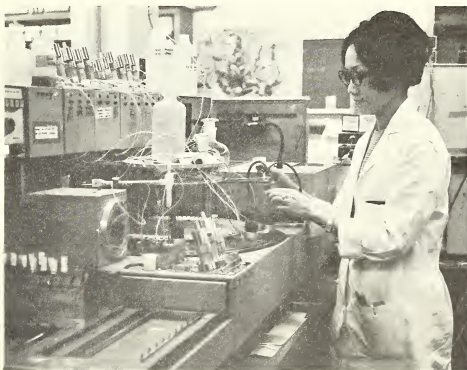
S.F. PUBLIC LIBRARY

This is the first public library in the country to develop a completely computer-controlled periodicals system. Louise Santoro looks up a magazine title in one of three catalogs produced by the system enabling the user to find any periodical by its title, subject area or foreign language. Copies of the catalog are distributed to Bay Area public college, and special libraries and to all local high schools.



S.F. GENERAL HOSPITAL

Admissions clerk Flora McGee enters new patient information into "video" terminal and receives back computer-assigned patient number as record is added to admissions file at City Hall computer.



S.F. GENERAL HOSPITAL

Laboratory technician Rita Lee places blood sample on highly-sophisticated Robot Chemist to determine cholesterol level. Results are converted to digital output by attached special-purpose computer.



MUNICIPAL COURT

Key punch operators at Hall of Justice annually record information into more than 1 million parking and moving citations. These are then used to record payment, produce notices, arrest warrants, and traffic court calendars.



MUNICIPAL COURT

James D. Leddy, Chief of Traffic Division pulling a parking citation card for violator paying at window -- one step in computerized process.



POLICE

"Any outstanding arrest warrants on this suspect in the Bay Area?", officer Ray Allen asks PIN-- the Police Information Network computer at Alameda County. Marsha Bryan handles one of 375 such requests a day.



PORT OF SAN FRANCISCO

Bernard Shirar, supervisor of data processing and John Yeomans, chief accountant, review computer-produced rental billings for approximately 1000 tenants of the Port facilities.



CONTROLLER

Agnes O'Connor of the Controller's Office enters a purchase order for the Appropriation Ledger directly into the computer. The Accounting Information System maintains over 8000 Ledger Accounts for every department in the city.



BUDGET BUREAU

To reflect a department's request for new employee positions, Juanita Thomas adds a new budget line to the computer file. The New Budget Information System stores over 24,000 line items as they are changed by the Mayor's Office and Board of Supervisors.



SOCIAL SERVICES

Telephone staff at 585 Bush Street refer clients to proper social workers and answer workers' inquiries by means of terminals connected to City Hall computer.



SOCIAL SERVICES

James Lee at 585 Bush Street prepares 6000 Food and Rent orders per month on punched-card equipment.

TELEPROCESSING TRANSACTIONS

18 Week Period January 4, 1970 - May 9, 1970

	<u>TOTAL TRANSMISSIONS</u>	<u>HIGHEST WEEK</u>	<u>LOWEST WEEK</u>	<u>AVERAGE PER WEEK</u>
Assessor	517,663	80,075	7,415	28,759
Tax Collector	249,485	38,892	3,555	13,860
Controller	192,144	22,369	6,137	10,674
Social Services	423,669	31,818	17,111	23,537
S.F. General Hospital	588,741	41,139	28,280	32,707
Police	10,311	1,777	68	572
Monitor in Computer Room	30,935	2,122	1,463	1,718
Total	2,012,948	177,482	73,181	111,827

Since the teleprocessing system operates 7 days per week, following are daily averages:

Sunday Average - 2453 transmissions per day

Saturday Average- 5818 "

Monday thru Friday-20,711 "

CURRENT PROJECTS

ADULT PROBATION

PR The Adult Probation is currently implementing a computerized Child Support System which will provide an automated means of:

1. Recording both criminal and civil child support cases.
2. Controlling child support payment distributions.
3. Accounting for child support payments and delinquencies.
4. Disbursing all payments received.
5. Producing automatically delinquency notices, arrest warrants and orders to show cause.
6. Developing case histories, financial and statistical reports.

Also, a teleprocessing terminal has been installed providing access to Social Services files and to the basic court system files now under development.

CURRENT PROJECTS

AIRPORT

PCS The IBM Progress Control System-360 application program was initiated at San Francisco International Airport in April 1969, under the direction of the management consulting firm of Arthur Andersen, Inc. The purpose of the software package was to provide a means of directing and controlling the development of nearly \$192 million worth of terminal area expansion program projects by utilizing the critical path method of scheduling.

The initial concept consisted of a single computer network composed of standardized precedence networks depicting the step-by-step procedures necessary to develop various categories of construction such as Airport Architect originated projects, apron projects, demolition projects, etc. Contract packages consisting of project groupings were interrelated externally to provide the sequence in which construction was to be performed.

As the work progressed it became necessary to simplify and split the single computer network into several separate networks. Also, the interrelation between the construction of the terminal roadway system and the North Terminal and central garage complexes dictated that control be extended to these contracts. Starting with the terminal roadways contract, the contractors' schedules are to be reduced to precedence networks and incorporated into the Airport's PCS Program.

CURRENT PROJECTS

AIRPORT

PCS (continued)

The regular monthly production of these computer network programs by central data processing plays a vital role in converting progress feedback into accurate and meaningful schedules for the direction of the airport's expansion program.

CURRENT PROJECTS

ASSESSOR - TAX COLLECTOR - CONTROLLER TAX ACCOUNTING

PROPERTY INFORMATION SYSTEM

The Property Information System services the data processing requirements of the Assessor, Tax Collector and Controller-Tax Accounting related to the movement of property data. Prior to the conception and design of the system, data processing was performed independently for each of these departments with a consequence of duplicative efforts in structuring and maintenance of files, preparation of reports and accounting for taxes.

The Property Information System constitutes a coordinated and inter-dependent set of data processing procedures of property assessment, tax collection and tax accounting. Property data flows through the system and is reflected in the appropriate areas of assessment, taxes and accounting.

A feature of this system is the use of remote teleprocessing terminals to communicate directly to the computer. These terminals are of the visual display type (cathode ray tube) and of the printer-keyboard type. The Assessor, Tax Collector and Controller's Offices have been provided a network of terminals installed in the various offices to retrieve and display property records instantaneously from the computer and to update certain files.

ASSESSOR

The ability to maintain the files on site by Assessor's personnel eliminates many intermediate processes such as keypunching input data, punched card manipulation and the like. A significant reduction in assessor's budget for 1970-1971 for data processing has been made principally by this means.

During this fiscal year, we intend to use a new off-line data entry device in conjunction with optical character recognition equipment for updating some of the data files, beginning with the Veterans File. This is another method which will be used to eliminate key punching and key verification.

Modifications to the present system, particularly the Homeowners Exemption Procedure, will be continued in 1970-1971 in order to comply with State and Local Legislation and with the procedural standards set by the State Board of Equalization.

The system study for a new Real Estate Sales Ratio Procedure, replacing the current one used by the Assessor, will be made in 1970-1971 in order to meet an assessment standards requirement of the State Board of Equalization. This procedure, when put into operation, will be a powerful tool designed to assist appraisers in the assessment of Real Property and to assist the Assessor and the State Board of Equalization in checking on the appraiser's assessment practices.

CURRENT PROJECTS

ASSESSOR

The various projects associated with the Assessor:

<u>Project Identification</u>	<u>Description</u>
AAA	Veterans' affidavits, to qualify for real estate tax exemptions, are maintained on a computer file which is subsequently used to produce new affidavits, veterans indices by name, and reminder cards for mailing.
ABA	Marine records are maintained on a computer file and used to create marine field books for use by assessor in evaluating marine property (boats, etc.) as well as to produce personal property statements for mailing to owners.
ADB	Recording, assessment, and printing of tax rolls on Personal Property are covered by this project.
AEA	Audit trails for all changes made to the assessor's files through the teleprocessing terminals are established and a computer file by owner's name is created for ready reference by name only.
AFB	Business personal property statements are computed and printed.
AGA	Homeowner's exemption file is maintained and used to print homeowner's claims, receipts, reminder cards for mailing and to make an automatic posting to the Secured Real Estate Property file.

CURRENT PROJECTS

BOARD OF SUPERVISORS

OBA/20 Postcards are prepared to be sent to homeowner's in reference to re-zoning.

CITY PLANNING COMMISSION

CPA The City Planning Commission is preparing a Land Use Survey
CPB of the City and County of San Francisco in conjunction with the Federal Government's 1970 Census. The department is utilizing city's computers and staff to facilitate completion of the survey.

Phase I which provides the department with a master file and printed outputs for its field survey work is completed.

Phase II will proceed, during fiscal year 1970-1971, to develop methods of utilizing the department's collection of data to produce informational and statistical reports. The benefit to be realized will be a substantial reduction in the time required to prepare the Survey. This data will also be utilized to provide new management reports not now possible.

CURRENT PROJECTS

CIVIL SERVICE - PAYROLL

ICS Fundamental to the success of any data processing system involving payroll and personnel is the establishment of accurate files and the ability to maintain them in a current condition. At this time, five files are being developed and maintained through the use of teleprocessing terminals:

- . Certification File
- . Personnel Identification File
- . Temporary Requisition File
- . Cross Reference (Social Security No.) File
- . Salary File

After determining the current sick leave and vacation balances for the city's 26,000 employees, the above files will be used to provide the data for a system to programically assist the Civil Service Commission in the certification of the city's timerolls.

In connection with the above project, a staff has been assigned the task of insuring the accuracy of the data placed in the teleprocessing files. To facilitate this clerical effort a system has been designed and established to machine verify the data.

Preparation and maintenance of the Salary Standardization Ordinance and the Annual Salary Ordinance is provided.

PROJECTS ASSOCIATED WITH CIVIL SERVICE (continued)

SAA Annual Salary Ordinance rates that have been changed by Salary Survey, by union contracts, by Charter sections dealing with Police and Fire personnel, etc. are updated to print the Annual Salary Ordinance working copy and to create the Annual Salary Ordinance.

Number of budgeted positions with rates are printed for purpose of analyzing salary relationships.

Maximum salary level charts are created that serve as a reference, to the personnel analyst and the examiner by grouping equal annual salaries and/or Civil Service Classifications in a tabular manner along with pertinent information.

Budget positions are printed by level chart by salary, by classification, and by salary survey.

Using Salary Survey file the following reports are printed:

Weighted average for classifications, salary survey cost figures, salary survey report, item analysis of Civil Service examinations, bi-weekly pay schedules of rates and disability transfers.

SAL The budgeted personnel cost of employees governed by Charter Section 151, for Salary Survey purposes, is extracted from the budget-on-line file to produce a listing by classification of the annual cost of salaries based on the budgeted amount for the current fiscal year or on the amounts requested by the departments for the forthcoming fiscal year.

CURRENT PROJECT

CONTROLLER - ACCOUNTING INFORMATION SYSTEM

The Accounting Information System was designed in 1968 because the timely availability of accurate financial information to the executives of the City is vital for the proper administration of the functions under their control.

The first phase of this system has been in operation since July 1968 and includes maintenance of the Controller's Appropriation Ledger through teleprocessing terminals located in the Controller's General Office. Throughout 1969-1970 the Budget System subsection was expanded to increase the accessibility of current accurate budget information by utilizing visual display terminals. In October 1969 teleprocessing was implemented to provide for instantaneous retrieval and display of all pertinent budgetary statistics as well as the facility to maintain these files via the terminal; hence, the budget statistics can be easily modified to reflect even the most current changes. By this means many of the complex and time-consuming tasks associated with keypunching and file maintenance are avoided. Verification at the terminal minimizes human error.

In 1970-71 a Nine Year Expenditures Listing will provide information about the expenses of the years 1960-1969 to better assess the needs of the next decade and to more efficiently utilize tax monies. The computer will also be used to perform audit functions to alleviate the time-consuming work associated with the non-automated approach.

CURRENT PROJECTS

CONTROLLER - ACCOUNTING INFORMATION SYSTEM (continued)

Its ability to produce accurate reports results in the printing of the Annual Budget, Appropriation Ordinance, Salary Ordinance, newspaper and publication copies, and various working copies for departmental use, the compilation of budget statistics and revenue accounting directly from entries of the Appropriation Ledger, and many more.

The Outstanding Warrants Reconciliation System, a subsection of the Accounting Information System is the third phase completed within the fiscal year 1970-1971. It provides monthly reconciliations, current outstanding warrants list, and error listings. Prior procedures were laborious, and often not done immediately at end of month. Manual procedures are reduced to handling exceptions only, such as duplicate payments, alteration of warrants, etc. The Warrant Register System is the fourth phase of the Accounting Information System which was completed in fiscal year 1969-70. It provides registers to reflect all warrants issued and general ledger control account totals for posting to the General Ledger.

CURRENT PROJECTS

CONTROLLER - PAYROLL

CAA

"Happy is the Day

When the Army Gets Its Pay..."

If the old song is true, there are a lot of happy days in San Francisco for an employee payroll is produced nearly every working day.

The operating cycle of creating the timeroll at the beginning of each bi-weekly or monthly payroll period, processing the timeroll at the end of the period, and generating a payroll register and warrants is a continuous operation.

A changeover of paydays from semi-monthly to a bi-weekly basis for the current payroll system was implemented July 1, 1970. In depth system study, design, new program generation and modification were accomplished without major complications.

A fairly constant stream of changes is required to maintain the present payroll system caused by changes in FICA and Federal Withholding Taxes and mandatory changes in salary rates due to salary standardization. In addition, revisions in Health Service and Retirement Systems cause alterations to premiums and employees' contribution rates.

Personnel files have been placed on-line to the computer to enable maintenance to be made through terminals.

CURRENT PROJECTS

CONTROLLER - PAYROLL

CAA (continued)

Teleprocessing programs to support this were written with the emphasis on file maintenance and the assurance of file integrity through extensive computer editing. This is further described under Civil Service Project ICS.

Reports were generated for vacation, school term employees, power of attorney, contributions, standardization pay rates, savings bonds registers of earned and bond purchases, refunds, OASDI, FICA, and Federal Withholding Taxes in various formats and sequences in addition to timerolls, timeroll file sequence registers, payroll registers and warrants.

CAC Voluntary deductions for 26,000 employees were authorized for 85 different bonafide employee organizations and credit unions. Monthly detailed listings of deductions by organizations and remittances in the amount of \$1,300,000 were distributed to the 85 organizations.

Savings bonds deductions were authorized for 1200 accounts on which balances are maintained. Monthly remittances of \$100,000 were made to the Federal Reserve Bank for bond purchases.

PROJECTS ASSOCIATED WITH THE CONTROLLER:

CBS Budget Master File can now be updated on a piece-meal basis facilitating control and expediting budgetary process because each transaction dynamically updates all affected totals.

Budget information is available earlier and special reports can be produced on shorter notice. Inquiry can provide management with timely information and on-line capability of adding, deleting, and modifying budget proposals. All city departments with terminals are able to retrieve budget information.

CFB Existing on-line Appropriation Ledger Accounting System can now be updated directly from source documents either through the display terminal or through punched cards. Appropriation Ledger Account balances are immediately accessible to all city departments with display terminals. Quarterly allotments are automatically made. New fiscal year Appropriation Ledger cards are produced by computer. Concurrent operations of old and new fiscal year's Appropriations is possible without closing old fiscal year Appropriation Ledger.

COW Outstanding warrants reconciliation, a card system whereby each cancelled warrant is manually traced to its disbursement authorization, is now being replaced with a disk and tape oriented system. The former manual listing method was tedious and time consuming and lacked adequate internal control. Approximately 45% of the outstanding warrants are now on disk and tape and continued replacement is being

PROJECTS ASSOCIATED WITH THE CONTROLLER: (continued)

- CWR The Controller must maintain a Warrant Register in the manner prescribed by the State Government Codes. An optical scanner, tape and disk oriented system provides a register, listing all warrants issued and monthly totals of general ledger control accounts. The new system is running parallel. Further Warrant Register development is being studied to isolate these transactions from Appropriation Ledger System.
- CAB Information concerning city employees earnings for tax report currently on a manual card system has been converted to a tape oriented system to minimize card handling.
- CAB Wage Earner Information W-2 forms (Wage and Tax Statement) are provided for each wage earner. U.S. Information Tax Return, Form 1099, is submitted to Federal Government together with magnetic tape files furnishing the Wage Earner Information of the City and County of San Francisco employees. The California Information Tax Return Form 599 is submitted to State government together with magnetic tape files.
- CIR U.S. Annual Information Return (Form 1096) and its companion, California Annual Information Tax Return (Form 596) are prepared each year to transmit individual information reports (Form 1099) to the Federal and State Governments.

PROJECTS ASSOCIATED WITH CONTROLLER:

CIR (continued)

Information reports are prepared for individuals paid \$600 or more for personal services (except employees) during the calendar year. The current card system is replaced by a tape oriented system which coordinates all the individual departments' data together under the Controller's office and produces the Form 1099 from one separate entity.

CURRENT PROJECTS

HEALTH

MAE Bed Census is an operational system that provides the hospital status of each inpatient at San Francisco General Hospital on a daily and monthly basis.

Bed Census data entry will be changed from keypunch to on-line. The Bed Census file will also be online during primeshift for inquiry from San Francisco General Hospital Billing, Medical Records, Admissions, and Administration sections.

Online Bed Census data entry will provide a current census by 8 A.M. each morning. This will eliminate the present 24-36 hour turnaround time during which the hospital relies on a manually maintained census. The census information could also be used to post on a daily basis to an inpatient billing system. Online access to census data will give the hospital location of any inpatient for answering queries from the public, doctors, or hospital administration. Provision will also be made for determining the availability of beds in each ward to facilitate inpatient admissions and transfers.

MAD Admissions System at San Francisco General Hospital is an on-line teleprocessing system in which patient number is assigned by the City Hall computer through 9 remote terminal locations at the hospital. A patient name-number index is then created and available to any department for proper identification of services and charges.

MAD (continued) Readmitted patients retain their original number for record continuity.

Improvements to the patient identification scheme are in progress. Automatic typing of patient admission forms, inpatient bill summaries, and when necessary start of the medical record will be implemented.

Identification scheme improvement will minimize future multiple hospital number assignment to a given person and decrease the average processing time for an inquiry.

Automatic form typing will lessen the amount of manual typing and guarantee that each person admitted has the proper paperwork initiated on a timely basis.

MAC Statistical basis accounting is a system to provide data to Medicare and Medi-Cal to support present San Francisco General Hospital methods of distributing ancillary service charges.

CURRENT PROJECTS

HEALTH SERVICE SYSTEM

The Health Service System is one of the personnel services departments that provides health insurance in the form of various plans for City and County of San Francisco employees their dependents, retired employees and their dependents.

The two projects serving the Health Service System in data processing are:

- MAA The Membership Project that enrolls, establishes eligibility and provides for payroll or direct payment contributions of over 60,000 members. Various membership files, lists and statistics are produced in addition to the major membership project function that allocates the members contributions for Contract payments, allows for city matching and retired subsidies and creates a holding or accounts receivable file.
- HSS The Claims Project which machine processes the Health Service System's own self administered Plan One claims. The processing produces a claims roll with payment warrants and payment information. Claims statistics, lists and control information and totals are also provided.

CURRENT PROJECTS

HUMAN RIGHTS COMMISSION

OAA This system provides statistical reports of racial and ethnic employment patterns in departments of the City and County.

JUVENILE COURT

The Juvenile Court plans to computerize its identification and statistical research data during this fiscal year. A master file of basic sociological data will be created to produce reports on detention practices, counsel representation, placement and disposition on a regular basis. These reports now produced manually are time consuming and costly.

CURRENT PROJECTS

LIBRARY

LIB San Francisco Public Library was the first public library in the country to develop a completely computer-controlled periodicals system. The operation includes daily check-in and binding of current issues, lists of current receipts, monthly statistical reports, and annual order lists. The most important result of the project has been the publication of a three-volume, book-form catalog of 7,641 magazines, newspapers, selected government documents, and serials held by the library. The catalogs enable the user to find any magazine in the library by its title, subject area, or foreign language. Complete information about these periodicals was previously available only in the Periodicals Department card catalog. The new book-form catalog is now available in every department of the main library, and in all the neighborhood branches. Also, copies have been distributed to all Bay Area public, college, and university libraries, to all the local high schools, and to most of the special libraries in the Bay Area. Thus, a library patron at any of these facilities can obtain immediate information about periodical holdings without a special trip or telephone call to the library.

CURRENT PROJECTS

MUNICIPAL COURT

MCA Data Processing services for the Municipal Court are currently concentrated in the processing of parking and moving citations. The volume approaches two million citations annually and adds \$2,600,000 to the city's revenue. A separate small computer and keypunch facility is located at the Hall of Justice, because of the volume involved and the proximity to the other functions such as payment, court calendars, etc.

Jury selection is also being performed using computerized methods utilizing San Francisco's voter's registration files kept on magnetic tape. This is an excellent example of how data maintained by one department can benefit another. Prospective jurors are randomly selected and a notice prepared for mailing.

Civil indexing for the Municipal Court consists of maintenance for the court of indexes to civil law cases before the court. Indexes such as alphabetic indexes of Plaintiff vs. Defendant, and Defendant vs. Plaintiff, etc. are maintained. These lists are a tremendous aid in answering inquiries and directing people to the proper court functions.

CURRENT PROJECTS

POLICE

POL About 20,000 incidents, arrests, accidents, and changes are recorded monthly at the Police Department and form the basis for monthly statistical and crime prevention reports.

This data then is utilized by other projects POP and POX described below.

POP A teleprocessing system is operational which provides incident and arrest data on remote terminals at the Hall of Justice from files maintained in the computer of City Hall. Police personnel can enter a name or other arrest data into their terminals and receive back details of the incident.

POX An indexing systems listing accidents and incidents has eliminated the need to type, sort and insert 300,000 name strips a year into large racks. Also many administrative reports are being produced on a regular basis.

LAW Warrants for arrest are prepared for entry or removal to the Police Information Network (PIN) computer system maintained jointly at Alameda County by all Bay Area jurisdictions. This highly successful cooperative venture has since 1966 enabled law enforcement agencies to serve each other's warrants and to keep abreast of criminal activity in the Bay Area through remote terminals. San Francisco Police have two PIN terminals at present.

CURRENT PROJECTS

PUBLIC WORKS

Under direction of the Department of Public Works, a Hydrologic and Hydraulic Data Acquisition and Recording System was installed in December 1970, to collect data from 20 rain gauge stations and 120 sewage flow monitoring stations distributed throughout the City. The system has been implemented to analyze the City's present waste water collection system under dry and wet weather conditions. The direct measurement of flow in a partially full pipe is very costly; therefore, this system collects water level data and flow calculations are performed in real time using a small computer and flow equations.

Each remote station is portable and can be moved to another location with minimum cost and effort. No street excavation is required to install the water level remote stations, which results in savings in cost and installation time. Data from each remote is transmitted back to the Central Station over leased communication links.

The Central Station contains an on-line Honeywell H-316 computer, Data Communications interface equipment, Magnetic Tape Recording equipment, Logging Teletypewriter and all computer programs to perform the operational functions. Each remote is automatically scanned and its data is transmitted to the Central Station computer via telephone lines, processed, time correlated and recorded on magnetic tape in a format compatible for reading with IBM 360 tape drives-in addition, alarms and periodic and summary logs are typed on the master station logging device.

CURRENT PROJECTS

PUBLIC WORKS

PAA/20 Cost data for the various divisions of Public Works and for
PWA/20
PWB/20 work orders of other departments are collected and a variety
of reports prepared. Some of these are labor distribution,
stock status, stores, billing of work orders, licenses,
permits, telephone directory.

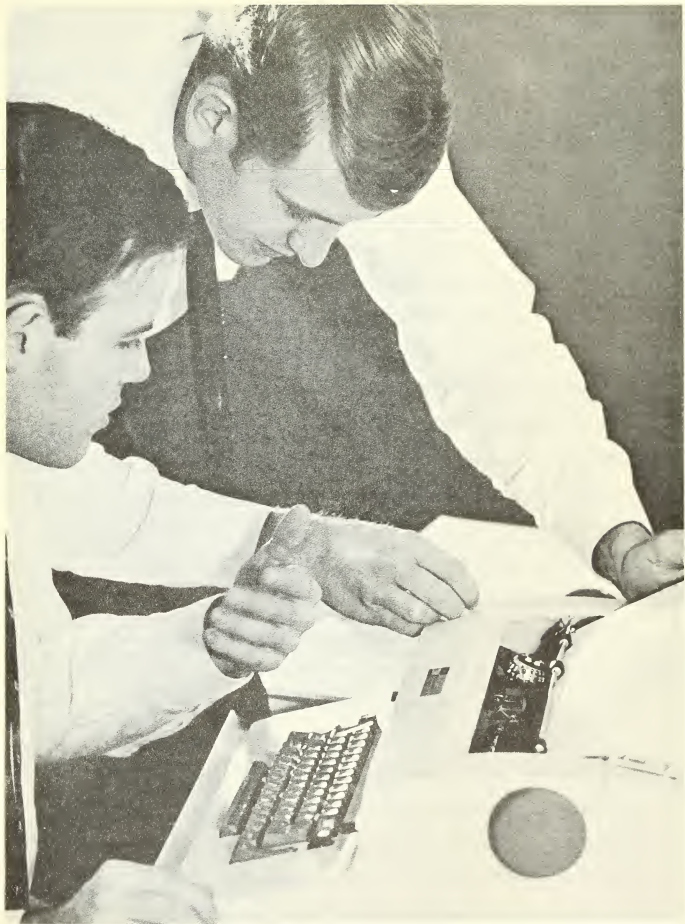
PGA/20 Urban Renewal reports are prepared for Building Inspection.
PWT/20

PBI Housing code enforcement program requires status reports and
statistical analyses of multi-family housing.

PFA Electrical permit file is maintained on punched cards and
reports are prepared as required.

UAA FACE (Federally Assisted Code Enforcement Program) is aided
UAB
Z01 by the maintenance of a Property Conservation file for the
Building Inspection department and the processing of complaints
and reports as required.

A new system called FACE/ABATEMENT is to be implemented next
year in which all files will be updated through the use of
the optical scanner. Files will be maintained and reports
prepared recapping the status of all properties within the
jurisdiction of each area or district of the City and County.



PUBLIC WORKS

Engineers of the Structural Engineering, Building Inspection, and Surveys departments utilize terminals and programs of "Time-Sharing" computer services to perform their complex calculations.

CURRENT PROJECTS

PURCHASING

PUR Four areas of activity are covered in a reporting plan which assists the management of the City/County purchasing function:

- . Equipment and vehicles
- . Inventory of material and supplies
- . Purchase order statistics
- . Other miscellaneous activities

A file of 50,000 items of city-owned equipment is maintained and listed periodically for various requests. As new items are purchased an annual report is prepared and they are added to this file.

A city vehicle automotive maintenance system (gas, oil, repairs, labor, etc.) produces over 20 monthly, quarterly, and annual reports to satisfy insurance, vehicle management, and cost accounting requirements. Material and supplies inventory on 3,000 items stocked in city warehouses is printed monthly. Data recorded during purchase order typing is used to prepare a purchase order register, requisition index, for cross referencing as well as to accumulate an average use report on all items ordered. Garbage statistics and an annual list of bid awards are examples of other reports produced.

CURRENT PROJECTS

REGISTRAR OF VOTERS-CONTROLLER

The vote counting system functioned smoothly in both June and November 1970 elections turning out 97% of the November count by 1:00 A.M.

Continuous press releases of the count at 15 minute intervals were provided and up-to-the-second results were available on visual display terminals throughout election night. Terminals for both press and candidates were strategically located for their use. The system thus proved its ability to handle either a complex primary or a smaller general election with equal facility through the following major steps:

- . Election judges write counts in tally books from back of voting machine.
- . Election judges deliver tally books to City Hall for login and check of missing precincts.
- . Auditors make quick visual check of tally books for completeness, legibility.
- . Key punch operators convert count to machine-readable cards.
- . Counts fed to computers.
- . News releases printed and counts now available on visual display terminals.
- . Verifiers post-audit each tally book using visual display terminals, correct as necessary and recycle tally book through keypunch and verification.

CURRENT PROJECTS

REGISTRAR OF VOTERS-CONTROLLER (continued)

If a recount is demanded by an authorized official or candidate, the entire file is listed in detail and each item in question is re-verified against the original tally book.

A back-up system is available in case of major malfunction but it has not been necessary to utilize it.

CURRENT PROJECTS

REGISTRAR OF VOTERS

VAA Registered voters, districts, precincts, and polling place files are maintained in the computer. Registrations and changes are made through the use of the optical scanner and the files are then used as a source of many reports and statistical analyses:

- . Mailing inserts to all voters
- . Precinct poll lists
- . Audit against election night precinct count
- . Jury selection (see Superior and Municipal Courts)

Because of the peak-load nature of its work, this department has particularly enjoyed the benefits of high-speed computer processing and printing capabilities.

Precincts are assigned automatically as a registration is entered eliminating a time-consuming manual coding job.

Many of the above listings were manually prepared or required costly professional printing before this system was instituted. During this year, continual development will add social security numbers to the file and purge non-voters.

VOT/20 Payments to election officials and polling place rentals
CAD/20 are made through this procedure.

CURRENT PROJECTS

RETIREMENT SYSTEM

The four data processing projects provided for the Retirement System are:

RAA Active Contribution Accounting

A membership accounting file of 33,500 records is maintained by Data Processing with input data from Controller's Payroll and the Retirement System. The data contains historical and statistical information, contribution and interest amounts for each account. This file is used to process the following reports:

Monthly - Audit Exception List (Payroll items unmatched with Master File), Transaction Register, Miscellaneous Transaction Lists, and Charter Section Reports.

Weekly or Bi-Weekly - Selected Ledger Printout with accounting data updated to date of latest Transaction Register.

Annually - Account Ledgers, Auditor's Confirmation Statements and Reports. Investigation and Valuation Reports and Cards.

REM Retired Allowance

Data processing maintains a historical and statistical information file of 7,000 retirees with accounting data to produce monthly rolls and warrants. Following reports are produced from the above files:

Monthly - Warrants, rolls and file maintenance lists.

Annually - IRS Form 1099 reports. Investigation and valuation reports and cards.

CURRENT PROJECTS

RETIREMENT SYSTEM

RET Bond Investments

Files are maintained on about 2,000 punched cards and the following reports are produced:

Monthly - Maturity and Interest Reports

Semi-Annual - Book-Value calculation

Annual - Book-Value calculation and bond data report, overall maturity list. Average yield report.

REM Compensation

Bills for medical payments now being keypunched and stored as monthly files, from which following reports are prepared.

Monthly - Warrants and payment statements fund breakdown summary.

Annually - IRS Form 1099's for personal services payments.

CURRENT PROJECTS

SOCIAL SERVICES

A teleprocessing network of visual display terminals has been provided the Department of Social Services. The system features 40 visual display terminals strategically located within the department's five buildings. These terminals are linked directly to City's computers and have the facility of immediate access to computer stored recipient aid files. The system enables case workers to retrieve information pertaining to case histories in a matter of seconds. The San Francisco General Hospital is allowed use of recipient aid files for rapid identification of recipients seeking hospital services from remote teleprocessing terminals on site at the hospital. As a result of training conducted by data processing Social Services, personnel are processing an average of 43,000 transmissions per week through the terminals.

Procedures in the Social Services field historically are subjected to a constant environment of change. Legislative and administrative actions emanating from Federal, State and local agencies require an allocation of staff to keep current the systems and computer programs through which the actions are reflected.

CURRENT PROJECTS

SOCIAL SERVICES

The major ongoing projects.

WAG This activity is concerned with the creation of the two principal master files upon which the entire system is based.

130,000 case records

240,000 persons records

WAE All changes to persons records are effected through this project. These people are reported to the state and may be eligible for medical benefits.

WAD All changes to case records are effected through this project. Social Services Department is currently serving over 80,000 recipients who receive categorical aid. This case load has doubled in the past 5 years. Additions, deletions, and changes are made daily so that the file may be used for issuance of:

- . Aid payrolls registers, warrants, etc.
- . Medical Identification cards
- . Statistics for Federal and State reporting
- . Information to other departments

Five increases in grant amounts at the state's request (Mandatories) have been processed this year.

A plan is proposed to return to a combined warrant and medical identification form with peel-off labels in place of multi-copy identifications and separate warrants.

Since 650,000 of these are produced annually any improvement in the system has a substantial effect. Advantages of the proposed system include, \$1500 per month in postage saving, single stuffing operation instead of two, later cutoffs in the month allowing last-minute changes, and automatic separation of hold checks and institution identification cards.

WAT The inquiry system which permits instant retrieval from the above files through terminals is covered by this project. Entry of name or case number will bring forth the desired records.

WAF Food Stamp Authorization Program is sponsored by the U.S. Dept. of Agriculture and administered by the city to distribute authorization cards to eligible recipients, who take them to participating banks, add cash and redeem them for a greater value of food stamps. These stamps are honored at most grocery stores. The city's cost is a handling charge per authorization payable to the bank plus the administrative costs of the program. There are currently 16,000 cases enrolled most of which receive two authorizations per month, or about 30,000 per month. This volume is increasing at about 5% per month. Food Stamp Authorization accounting system has just undergone a complete and successful revision. Through the use of Optical Character Recognition equipment, the system provides greatly increased direct control by the Food Stamp personnel. Forms, clerical transcriptions, and keypunching were simplified or eliminated.

The new system cost approximately \$10,000, but has saved the city approximately \$2,000 per month since July of 1970, by replacing the need for more than four clerical personnel.

When addresses fall outside of the city or the basis for issuance is over acceptable limits, no authorization is issued.

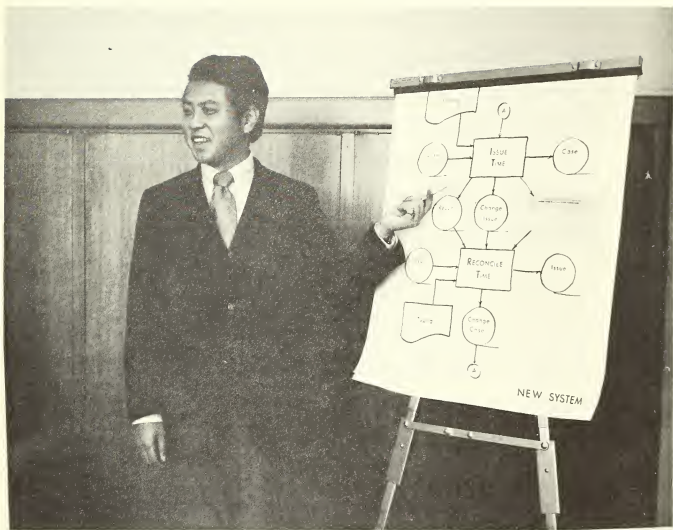
If clients don't participate at least two-thirds of the time, the computer automatically writes the client a letter of discontinuance, produces a list for the Food Stamp Personnel, and discontinues the clients' Food Stamp Authorizations. What was a very time-consuming manual chore is now independent of any manual aid.

WAM The General Assistance Program covers persons not eligible for State or Federal assistance who receive aid solely from the county. Plans to implement general assistance direct cash and direct rent payroll are underway replacing a punched card system which requires extensive audit by accounting clerks. The proposed system involves optically read input and possibly teleprocessing and/or micromation.

ZZZ Micromation is a system to condense large volumes of printed output into miniaturized images of each page on microfilm to conserve space, handling, printing, and make the data more accessible at less cost. A feasibility study on micromation is being made as to cost and impact on social services and data processing departments.

PROJECTS ASSOCIATED WITH SOCIAL SERVICES

BHI Foster and Boarding Homes and Institutions are reimbursed for child care under this system. Conversion of a cumbersome manual card system to a tape, and disk oriented system is being completed. The Boarding Homes and Institutions files can be updated by batch processing daily and it will be possible after services are rendered to make daily payments. Completion of this project will expedite the payments to the Foster Mothers, Boarding Homes and Institutions.



SOCIAL SERVICES

Stimson Lowe, programmer, discussing details of new Food Stamp System with representative of Social Services Department.

CURRENT PROJECTS

SUPERIOR COURT

SUP A jury selection system which utilizes the voter registration magnetic tape files randomly picks and prepares notices to 30,000 prospective jurors annually. Upon acceptance from about 7,000 of these, their names are typed and optically scanned into the computer system for inclusion on the jury lists, preparation of mailings, and other automatic by-products of the system. Much of the manual clerical work and repetitive typing previously required has been eliminated.

TREASURER

Data Processing budget includes the rental of an accounting machine and a sorter installed in the Treasurer's office. The equipment is used to reconcile and balance the daily bank clearings of Controller's Warrants presented to the Treasurer for payment. About 1,988,400 warrants are reconciled annually.

TOMORROW IN SAN FRANCISCO
DATA PROCESSING

FUTURE PROJECTS



IMPLEMENTATION SCHEDULE

FUTURE PROJECTS

[illegible]



FUTURE PROJECTS

POLICE DEPARTMENT - CABLE SYSTEM

The "CABLE" System as outlined for implementation by the Police Department over a three-year period includes four principal modules:

- . Field Support
- . Management Planning and Control
- . Records Management and Retrieval
- . Command Control

FIELD SUPPORT subsystem is designed to aid the uniformed field officer by improving on-line access to files regarding persons, vehicles, guns, property or places of interest to the police. This system would pull together information from FBI, State, Bay Area, and City computer files making it possible to query all these sources with a single inquiry. Thus a police officer who has stopped a suspect could know within seconds if the person is wanted elsewhere and if he is considered armed and dangerous.

Major Benefits are:

- . Improved officer safety
- . Increased apprehension and recovery probability
- . Less lost time waiting for responses to improve officer utilization and public relations
- . Increased revenue related to increased service of warrants

Operation of field support subsystem requires development of a communication capability, file management system necessary to process inquiries in and out of the system, and the data files upon which the system operates.



FUTURE PROJECTS

POLICE DEPARTMENT - CABLE SYSTEM

MANAGEMENT PLANNING AND CONTROL subsystem provides information to management at all levels for:

- . Problem definition
- . Planning of solutions
- . Measurement of operational activities
- . Replanning as necessary
- . Balancing of workloads

On the premise that people solve problems and make things occur, a full commitment to utilization of this system is required before implementation. The complete department activity profile to be analyzed by the system includes:

- . Crime-related activity
- . Traffic-related activity
- . Incident-related activity
- . Miscellaneous activity (court schedules, training)

Measurable results of these activities are:

- . Arrests by type of crime, location, date, etc.
- . Case clearance
- . Case results (complaints and court action)
- . Number of arrests resulting from dispatch calls, on-view apprehension, investigation
- . Change in accident volumes by location and time related to corresponding citations
- . Crime rate data by type location, time



FUTURE PROJECTS

POLICE DEPARTMENT - CABLE SYSTEM (continued)

Collection of the data described above will support other applications such as Resource Allocation (effective manpower assignment), Program Budgeting, and Employee Evaluation.



FUTURE PROJECTS

POLICE DEPARTMENT - CABLE SYSTEM

RECORDS MANAGEMENT AND RETRIEVAL subsystem addresses the requirement for a multi-media (computer-microform-facsimile) system to manage the flow of paper documents required as an integral part of police work, including:

- . Fingerprints
- . Case Reports
- . Arrest Reports
- . Photographs
- . Accident diagrams
- . Warrants

Such a system must have the following capabilities:

- . Reduce time required to retrieve documents from Records and Identification section for officers, courts, and public
- . Provide visual display and paper copy of centrally-stored documents at remote stations in districts, jails, courts
- . Conversely, allow remote stations to submit documents to central files
- . Provide a document retrieval system compatible and complementary to a sophisticated digital computer
- . Allow investigative searches through files

COMMAND CONTROL subsystem encompasses the effective use of field forces during normal and unusual operations through provision of computer and electronic support to the dispatch and command functions.

1880-1881

1880-1881

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FUTURE PROJECTS

POLICE DEPARTMENT - CABLE SYSTEM

COMMAND CONTROL (continued)

The contractor retained by the Police department has submitted a specification. After review of this Command Control Report, the resulting approach selected by the Police department will be documented and included in the final system specification due February 5, 1971.



EXCERPT FROM CABLE REPORT

COST ESTIMATES

SUBSYSTEM	DEVELOPMENT	YEARLY OPERATIONAL
1.0 FIELD SUPPORT	\$ 325,000	\$ 400,000
2.0 MGT. PLANNING & CONTROL	300,000	150,000
3.0 RECORDS MGT. & RETRIEVAL	1,500,000	900,000
S U B T O T A L	\$ 2,125,000	\$ 1,450,000
4.0 COMMAND CONTROL (To be established when review of alternatives is complete)		

FIGURE 6-2

Estimated Funding Availability

The continuing action grant support of the CCCJ to project 0079 (Information System) through FY 1972-73 is assumed. A reasonable level of action grant funding for the subsequent two years is also assumed. The continuation of discretionary grant funding at a \$250,000 per year level is also included in the funding estimates. Local participation at a level of 40% of grant funding in the form of cash, and city personnel in kind services is projected. The result of this preliminary estimate of funding levels is relected in Figure 6-3.

ESTIMATED FUNDING AVAILABILITY

FUNDING SOURCE	FY 1970-71	FY 1971-72	FY 1972-73	FY 1973-74	FY 1974-75
Action Grants	\$202,000	\$275,000	\$450,000	\$500,000	\$500,000
Discretionary Grants	250,000	250,000	250,000	250,000	250,000
SUBTOTAL	\$452,000	\$525,000	\$700,000	\$750,000	\$750,000
Local Match (40%)	512,000*	350,000	467,000	487,000	
TOTAL	\$964,000	\$875,000	\$1,167,000	\$1,237,000	1237,000
*current year actual					

FIGURE 6-3

FUTURE PROJECTS

COURTS

During 1971 it is planned to implement Court procedures in the Criminal Division, Superior Court, followed by the Criminal Division, Municipal Court. After these are functional, consideration will be given to their adoption by the Civil Divisions in 1972.

January 1971 Production of Daily Court Calendars from optically scanned input prepared by court personnel.

August 1971 Installation of Basic Courts System (BCS) -- an on-line system which provides a means for maintaining and viewing the up-to-date court calendars as well as the complete status of each person and case before the court.

This will be accomplished through seven terminals located at strategic places in the Hall of Justice connected to the City Hall computer. Court personnel will do the actual entering of data into the terminals, but this information will then be available simultaneously to:

- . Judges
- . Court Personnel
- . District Attorney
- . Public Defender
- . Sheriff
- . Adult Probation
- . Police
- . Other authorized agencies

The first of these is the fact that the
 government has been unable to secure
 the necessary funds to carry out its
 policy of non-interference in the
 internal affairs of the country.
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FUTURE PROJECTS

COURTS (continued)

Security measures will be employed which prohibit non-authorized functions.

The CALENDARING portion of the system aids the court administrator in keeping a centralized, up-to-the minute record of court schedules and calendars. Terminal operators can immediately update affected records as dispositions, additions, changes, and deletions are received from courtrooms, clerks' offices, and other sources. Calendars and schedules, as current as the latest terminal entry, can be viewed at any time.

The CASE HISTORY portion of the system stores the information on the cases before the court. Case numbers are entered on the terminal along with other basic information such as entitlement, case type, and filing date. The names of all persons involved in the action and the activities which have occurred to date, including calendar or schedule appearances and papers filed, may also be entered. Case histories may be displayed as needed.

The NAME INDEX portion of the system stores information about all persons involved in the judicial process. In addition to plaintiffs and defendants, these persons may include lawyers, prosecutors, judges, witnesses, police officers, and other individuals the court may wish to index. Supplied with a relevant name, the system can display all cases involving any of these persons. A court officer can, for example, routinely check the index to spot individuals released on bail (or probation) and subsequently arrested.

FUTURE PROJECTS

COURTS (continued)

The IDENTIFICATION NUMBER INDEX capability makes it possible for court personnel to view name and case information by entering a related number, such as the booking or FBI number.

December 1971 Extension of Basic Courts System to Criminal Division, Municipal Court by the addition of terminals at necessary locations.

1972 Consideration by Civil Divisions of Superior and Municipal Courts of adopting the system.

1973 Amplification of system as required to interface with information required or provided by other related agencies.

Benefits:

- . System is responsive to the dynamic court environment
- . Eliminates duplication of information by many related agencies
- . Frees personnel to concentrate on non-clerical tasks
- . Provides court administrators with tools for managing case loads, scheduling cases, court room facilities, court personnel

FUTURE PROJECTS

HOSPITALS - PATIENT ACCOUNTING SYSTEM

1970-71 Because of the ever-increasing legal complexities of Medicare, Medi-Cal, County and other aid programs, San Francisco General Hospital needs to implement a patient accounting system which will greatly improve the accuracy, timeliness, and detail level of its billing practices. The rising costs of patient care make an effective cost control system of paramount importance. There are several complete data processing systems on the market today which may be leased or purchased with associated services to aid in accomplishing this goal and lessen the developmental time and cost to the county. Final choice of a system will be made early in 1971 from proposals already received. These systems have five major components:

CENSUS This subsystem is an inventory file of inpatient beds. It is maintained by admission, discharge, and transfer transactions. Census provides the daily room charges for inpatients. Since the hospital already has a census system, it will be modified to be compatible with any new system.

PATIENT BILLING This subsystem provides a history of patient charges. Its output includes patient bills and revenue statistics. There are separate files for inpatients and outpatients. Because of the high volume of outpatients at this hospital, special procedures will have to be tailored to better handle this group.

FUTURE PROJECTS

HOSPITALS - PATIENT ACCOUNTING SYSTEM (continued)

ACCOUNTS RECEIVABLE This subsystem provides a detail history of payments and adjustments to an account after billing. Its output includes follow-up statements and account listings. This system is normally installed first.

GENERAL LEDGER This subsystem provides for the recording of revenue data and accounts receivable transactions.

EXECUTIVE This is usually a 'monitor' or 'overhead' program which controls the computer resources and provides common routines for a hospital-based system. Except for census, the entire system would be a batch-type system run once per day and not connected directly to the computer via terminals, at least not at its inception.

FUTURE PROJECTS

HOSPITALS - CLINICAL LABORATORY

1970-71 San Francisco General Hospital has installed on-site and is planning to expand a special-purpose laboratory computer system to service initially three departments:

Chemistry

Hematology

Bacteriology

The system is powerful enough to handle immunology, endocrinology, neurochemistry, blood bank, and nuclear medicine and can, if desired, function as a satellite feeding data via telephone line to the San Francisco Data Processing Center at City Hall.

This special-purpose computer is attached to all key laboratory instruments, monitors their processes, and converts the results to digital or printed read-outs.

It provides the clinical laboratory with an economical, efficient means of handling the massive quantities of data generated by rising laboratory work loads, and increases the productivity of its skilled personnel. Some functions are:

- . Generates laboratory work sheets
- . Collects laboratory data from the instrumentation
- . Analyzes data
- . Keys results to positive patient identification
- . Maintains Quality Control in the laboratory
- . Provides patient reports in printed form
- . Measures instrumentation and manpower loading in the laboratory
- . Provides epidemiological data

FUTURE PROJECTS

HOSPITALS - CLINICAL LABORATORY (continued)

By speeding test results and minimizing errors inherent in manual methods, immediate benefits accrue to the patient, physician, and laboratory.

A Facilities Management contract has been awarded to a consulting firm which specializes in the application of computer technology to the delivery of medical care. This firm will implement the first phase of the clinical laboratory system providing a complete package, including hardware, software, systems engineering, installation, interfacing, support, and maintenance.



FUTURE PROJECTS

LIBRARY - ACQUISITIONS

1971-72 ACQUISITIONS (OR BOOK ORDERING)

Acquisitions involves the recordkeeping of books from the time they are recommended through the ordering, receipt, distribution and payment procedures. The San Francisco Public Library with its 27 branches and annual book budget of \$800,000, orders about 100,000 books per year and is planning to computerize this facet of its operation during 1971-72.

By entering each order request into a computer file through a terminal in the central library, indices are created by title and author. The information then becomes readily available to the central library staff through terminals and to the 27 branches via telephone and lists. All changes in status (delivery dates, cancellations, receipts) will be entered as they occur until the book completes the process and is purged from the file.

Periodic printouts of the file inform all librarians of book status and flag those requiring expediting.

Other features of the system are budget and expenditure accounting, printing of labels for the "spine" of the books before they are shelved, and printing of the book orders themselves to vendors.

1890-1891

1891-1892

1892-1893

1893-1894

1894-1895

1895-1896

1896-1897

1897-1898

1898-1899

1899-1900

1900-1901

1901-1902

1902-1903

1903-1904

1904-1905

1905-1906

1906-1907

1907-1908

1908-1909

1909-1910

1910-1911

FUTURE PROJECTS

LIBRARY - ACQUISITIONS (continued)

Principal advantages are:

- . Reduction in clerical effort, repetitive typing, etc.
- . Immediate access to information by all library staff
- . Elimination of duplicate manual files (branches and central)
- . Consolidation of book orders by vendor
- . Vendor performance statistics
- . Financial information instantly available and current for selection, procurement, and budget decisions
- . Rapid follow-up on delinquent orders

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PART 1
1880

FUTURE PROJECTS

LIBRARY - CATALOGING

WHAT IS CATALOGING?

Cataloging is the heart of any library system. The detail with which the catalog describes and classifies a book is the key to the control that the library has over its collection. A complete catalog file contains all the information necessary to any other library application, from acquisition and circulation control to information retrieval and special-interest listings.

The actual production of printed catalogs in book form from a computer file is the main task in this application, replacing all library catalogs now maintained on 3 x 5 card files. Because catalogs must be accessible at various locations, several sets are required and with 370,000 titles these are large cumbersome card files.

Catalogs required for internal control are:

- 1 - The Official catalog - by author.
- 2 - Shelf list - by call number showing locations where books are kept.

Catalogs required for public use are:

- 3 - Dictionary catalog - contains all books in the main library and combines author, title, and subject in one file.
- 4 - Departmental and branch catalogs (approximately 34) contain all books in each department by author, title, subject.
- 5 - Paperbacks and audio-visual materials are not carried now.

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1904

FUTURE PROJECTS

LIBRARY - CATALOGING (continued)

WHAT CAN EDP DO?

The bibliographic components (author, title, classification, number, publisher, date, size, cost, description, etc.) can be recorded once in a computer's master catalog file for all applications. From then on this data can be rearranged, selected, printed, viewed on "video terminals", changed, purged, and otherwise processed at machine speeds and with machine accuracy without repetitive clerical typing and handling.

Quarterly catalogs with monthly supplements can be printed and distributed. Cards for book jackets can be printed along with any other special listings required. If desired, the catalog file can be copied to magnetic tape and used by a professional printer as input to the type-setting process.

WHERE DO WE BEGIN?

To minimize start-up costs it is feasible to begin with current acquisitions only, building the new master catalog as books are added, replaced or additional copies procured. As the printed catalog is built, the old card catalogs would be phased-out. Programs are currently available from Santa Clara County thereby minimizing the data processing effort and cost.

FUTURE PROJECTS

LIBRARY - CATALOGING (continued)

WHAT ARE THE BENEFITS?

- . Multiple copies--many users can have simultaneous access
- . Security--catalogs are reproducible.
- . Convenience--shows for the first time the location of books in the branches
- . Efficiency--shows in the branches what the main library has--saves telephone calls because all books in the system are available at any location
- . Clerical saving--avoids repetitive typing, handling, printing--frees staff for non-clerical tasks
- . Sub-sets or special interest catalogs--easy to prepare (i.e., juvenile)
- . Additions and deletions--once for all files
- . Uniformity--descriptions consistent

1. The first part of the document is a letter from the President of the United States to the Congress.

2. The second part is a report on the state of the Union.

3. The third part is a report on the state of the Treasury.

4. The fourth part is a report on the state of the Navy.

5. The fifth part is a report on the state of the Army.

6. The sixth part is a report on the state of the Department of the Interior.

7. The seventh part is a report on the state of the Department of Justice.

8. The eighth part is a report on the state of the Department of Education.

9. The ninth part is a report on the state of the Department of Agriculture.

10. The tenth part is a report on the state of the Department of Commerce.

11. The eleventh part is a report on the state of the Department of Labor.

12. The twelfth part is a report on the state of the Department of War.

13. The thirteenth part is a report on the state of the Department of the Navy.

14. The fourteenth part is a report on the state of the Department of the Army.

15. The fifteenth part is a report on the state of the Department of the Interior.

16. The sixteenth part is a report on the state of the Department of Justice.

FUTURE PROJECTS

COMMON PROPERTY INFORMATION SYSTEM

Within the past five years, advances in computer technology have made possible what could not have been envisioned a generation ago. The capacity of the modern computing system to handle information has increased almost exponentially with each new technical innovation.

A consequence of this has been the growth of the "information system" concept. Fundamental to this concept is the conviction that information, to be useful, must be readily accessible to a number of users in the form they desire. Before the large-scale computer, manual collection, storage, retrieval and processing techniques rendered most information practically inaccessible. The advent of the latest generation of computers has radically enlarged the capability for information handling and management.

But, having the physical capability to handle masses of data is not sufficient to bring information systems into being. The computer is the tool, not the master, and it requires direction to be used most effectively.

The foundation of an information system to be shared by many users is mutual understanding, cooperation, and planning. Careful review of the information resources and needs, their standardization, maintenance, and accessibility is a primary requirement for the construction of an effective system. Only when that work has been done can successful integration with the computer occur.

In 1970, the San Francisco Department of City Planning began forming a working group of city departments interested in the development of a Common Property Information System. At the time of this writing, more than twenty of those departments have designated representatives to participate in the common effort. The Department of City Planning's Newsletter, ACCESS, acts as a clearinghouse for the group. Close cooperation at the operating level has already been established with the Systems and Data Processing Division.

A geographic base file, indispensable for computer coding of area statistics, is being developed using materials and programs procured from the Bureau of the Census. The Systems and Data Processing Division is supplying the technical assistance and equipment necessary to render the base file an effective computer service; the Department of City Planning is responsible for liaison between the city and representatives of the bureau. Because of the willingness of Systems and Data Processing to undertake experimentation with the special address matching program, it has been procured at no expense to the city, and San Francisco will be one of the first to make use of its unique capabilities. This program will have eventual applications in a number of city departments, including the Police and Fire Departments, the Board of Education, and the Department of Public Health, to name a few. It will also permit ready access to the rich storehouse of census statistics essential to many programs.

The long-range goal of the information system is mutual, rapid, efficient use of city records to answer specific questions.

The act of examining the flow of information, of rationalizing and standardizing it is, in itself, capable of initiating managerial change. Attention is called to those places in the system needing improvement. Effective file maintenance procedures may be introduced where they are needed; unnecessary collection and duplication of information may be eliminated. Thus, efficiency is one of the long term goals of the development of an information system.

But most important, is the ability to produce timely and useful information for the users, especially those in government who bear the responsibility for making critical decisions on public programs and policies. As the problems of the city increase in complexity and are daily more needful of intelligent resolution, it is essential that all the resources for answering vital questions be marshalled and effectively used. Today, it is simply not possible to provide those facts that may have important bearing on the issue in a reasonable length of time, if at all. It is hoped that this Common Information System, a mutually beneficial arrangement for the sharing of basic information, enhanced by the power of the computer, will be an integral part of local government in the seventies.

FUTURE PROJECTS

COMMON PROPERTY INFORMATION SYSTEM

The Working Group

The following list includes the departments participating in the development of the Property Information System and the names of their representatives as of October 1970.

<u>Department</u>	<u>Representative</u>
Assessor	Mr. Val King
Chief Administrative Officer	Mr. Gilbert Boreman
Controller-Data Processing Center	Mr. Thomas Gerugthy
Economic Opportunities Council	Mr. Raymond Holland
Department of Finance and Records	Mr. Virgil Elliott
Fire Department	Chief Joseph P. Daley
Department of Public Health	Mr. Joseph Mignola Miss Mildred Holota
Housing Authority	Mr. Martin Eber
Human Rights Commission	Miss Edith Witt
Office of the Mayor	Mr. Revels Cayton
Public Library	Mr. John F. Anderson
Parking Authority	Mr. Arthur S. Becker
Police Department	Captain Louis Feder
Port Commission	Mr. Harry Thiemann
Real Estate Department	Mr. Douglas Weinkauff
Recreation and Park Department	Mr. Wesley Miller

THE [illegible] OF [illegible]

BY [illegible]

IN TWO VOLUMES

LONDON: [illegible]

18[illegible]

THE [illegible] OF [illegible]

BY [illegible]

IN TWO VOLUMES

LONDON: [illegible]

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BY [illegible]

IN TWO VOLUMES

LONDON: [illegible]

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FUTURE PROJECTS

COMMON PROPERTY INFORMATION SYSTEM

The Working Group (continued)

<u>Department</u>	<u>Representative</u>
Unified School District	Mr. Philip Cali Mr. Harold Weeks
Department of Social Services	Mr. Masaya Kakebe
Public Utilities Commission	Mr. C. Dean Collins
Department of Public Works Building Inspection	Mr. Alfred Goldberg
Engineering	Mr. Thomas Beggs

FUTURE PROJECTS

CIVIL SERVICE

1970-71 POSITION CONTROL

A prime requisite to aid the Civil Service Department in performing its employment function is the development of an automated position control system or manning table.

This would enable the department to know readily what vacancies exist and what action has been taken to fill them. All requisitions for new personnel can be checked against this table to insure that an authorized vacancy does exist and whether it is temporary or permanent.

Most of the system will be a by-product of a computer certification file created and maintained by the Certification Division of Civil Service through terminals connected to the central computer. This file contains an entry for each authorized permanent position in the budget and salary ordinance, together with the Social Security Number and name of the person filling it and whether his status is temporary or permanent. As vacancies occur, the position is marked vacant. If a replacement is desired, a requisition number will be placed in the file to indicate this. Then, when a new person is certified, his name and number will replace those of the former employee.

Positions for temporary jobs of short-duration will also be set-up with starting and ending dates to aid in their control.

Conversion work is already in progress on Police, Fire, and Municipal Railway employees and should be operational in July 1971, followed by other departments as soon as practicable.

1880-1881

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FUTURE PROJECTS

CIVIL SERVICE

1971-72 ELIGIBILITY LIST AUTOMATION

Each time a Civil Service examination is conducted for a given job classification, a list is created ranking the successful candidates in order of eligibility. Subsequent job requests are filled in sequence from these lists. As additional examinations are given, several lists may remain active.

An important requirement is the development and implementation of an automated eligibility list file that will, upon request, select the top eligible from all the lists under a given job classification and print for this top man a notice of probable appointment.

The lists to be added to this file are to be supplied and entered by the Examining Division of Civil Service, whereas the file is to be operated and otherwise maintained by the Certification Division.

When an eligible is selected for probable appointment, the file will be automatically posted to show such notification and date. The entry will be deleted when the notified eligible is subsequently certified to the position. If the eligible refuses the appointment, the Certification Division will enter the refusal on the record through its terminal and cause another notification to be printed for the next person on the lists.

FUTURE PROJECTS

RETIREMENT

An in-depth study of the entire Retirement System by qualified experts is scheduled for early 1971, to recommend a plan of action for this department.

WHAT IT COSTS

WHAT DOES IT COST?

The budget for data processing in 1970-71 for the City and County of San Francisco is \$5,662,426--less than one percent of a total of \$655,676,103.

Equipment leasing represents 40% of that budget, personnel costs are 43%, professional consultants are 10% and other expenses (supplies, magnetic tape, etc.) account for the remaining 7%.

The data processing budget has grown over the past four years from .6 percent to .8 percent of the total City and County budget, reflecting the increasing demand for services by the public.

- . Outstanding arrest warrants are up 148% since 1968
- . Citations are up 24% since 1966
- . Welfare cases are up 70% since 1966
- . Welfare payments are up 70% since 1966

During this time, data processing has not only increased its volume but has incorporated a steady stream of legislative changes to existing applications. Business tax, utility tax, payroll tax, homeowner's exemption, social security modifications, state income tax, medicare, and medi-cal are but a few of these.

In addition, entire new application areas have been added to the system. Since 48% of the staff are directly involved in input and output preparation and control, their workload rises commensurate with increased volume. About 18% of the staff is devoted to programming of modifications and enhancements to existing systems and 7% to new applications.



WHAT DOES IT COST? (continued)

An analysis of departmental expenditures for data processing in 1969-70 is shown on the following pages. A new accounting system has already been instituted to provide future expenditures by project for better cost control and estimating.

Some comparisons with other California counties are shown on the following pages. It is interesting to note that both Alameda and Santa Clara counties allocate a higher percentage of their total budgets to data processing. These comparisons also reveal that San Francisco's salary structure for programming and systems personnel is generally a little lower than the other larger counties, while operating personnel salaries are about equal.

MILLION
DOLLARS

700

600

500

400

300

200

Total City/County Budget

6

5

4

3

2

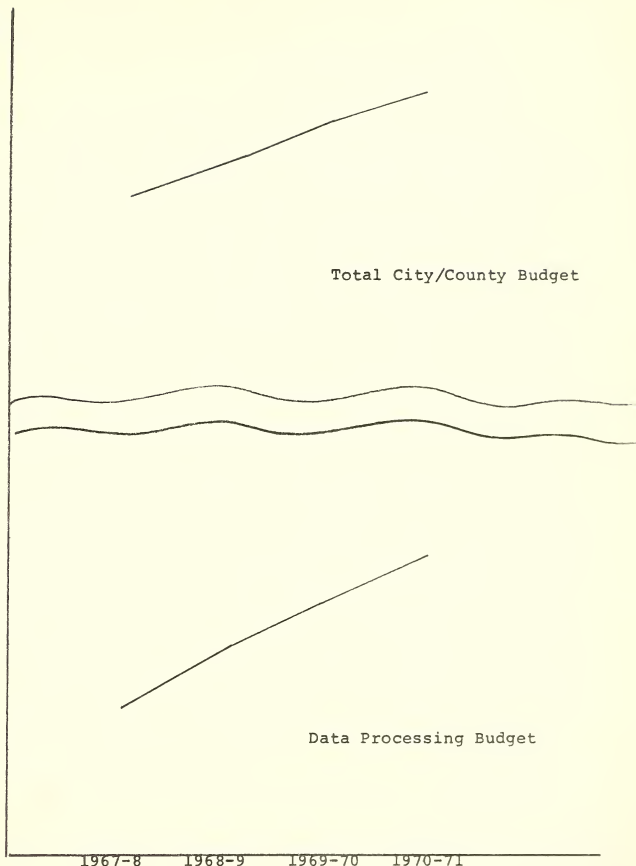
1

Data Processing Budget

1967-8 1968-9 1969-70 1970-71

HOW DOES DATA PROCESSING BUDGET COMPARE
WITH TOTAL CITY/COUNTY BUDGET IN SAN FRANCISCO?

1967 - 1970



CONTROLLER - DATA PROCESSING CENTER
BUDGET COMPOSITION 1967-1968 THRU 1970-1971

<u>Fiscal Year</u>	<u>Total City Budget</u>	<u>Total EDP Budget</u>	<u>Composition of EDP Budget</u>		
			<u>Personnel</u>	<u>Equipment</u>	<u>Other</u>
1967-1968	\$445,943,504	\$2,761,968	\$ 935,173	\$ 951,498	\$875,297
1968-1969	503,746,011	3,830,959	1,444,596	1,730,178	656,185
1969-1970	598,621,970	4,743,313	2,168,366	2,109,029	465,918
1970-1971	655,676,103	5,662,426	2,475,006	2,279,601	907,819

CONTROLLER - DATA PROCESSING CENTER
EXPENDITURES FOR OTHER DEPARTMENTS

1967 - 1970

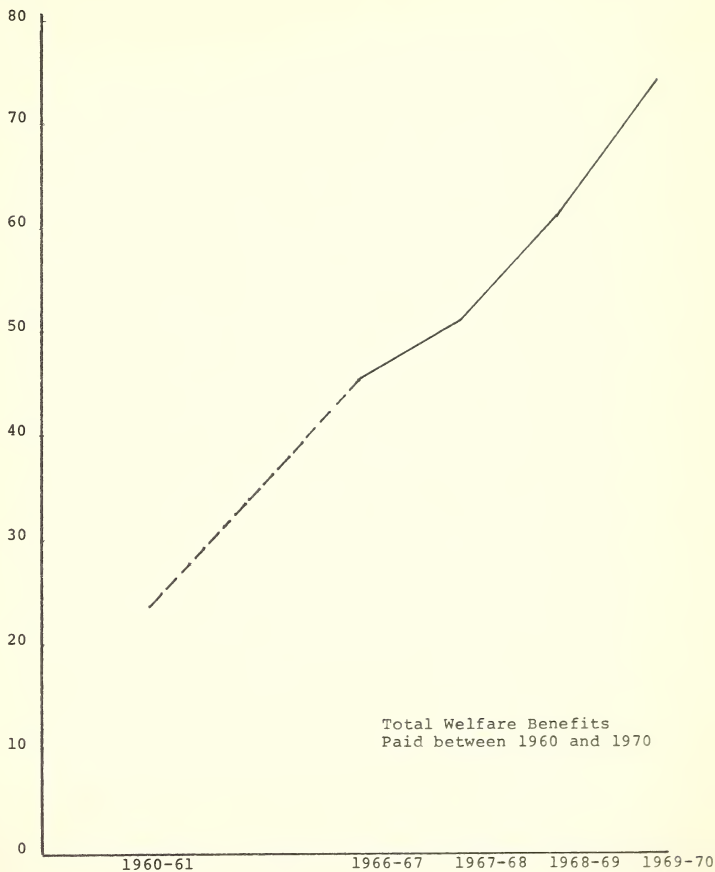
	<u>DEPARTMENT</u>			
<u>NUMBER</u>	<u>NAME</u>	<u>1967-1968</u>	<u>1968-1969</u>	<u>1969-1970</u>
115	Assessor	259,021	456,573	369,682
119	City Planning	168	50	1,235
121	Civil Service Commission	9,664	10,302	35,119
123	Controller	739,718	643,526	433,959
147	Human Rights	5,680	2,070	6,919
155	Municipal Court	134,972	159,600	204,750
161	Police	137,338	317,335	444,304
169	Social Services	780,900	669,326	754,786
179	Superior Court	5,807	1,500	3,621
183	Treasurer	3,966	3,968	4,012
255	Registrar of Voters	190,406	37,416	119,082
261	Tax Collector - General	52,588	137,055	157,388
263	Tax Collector - Hotel Tax	950	1,449	442
311	Purchaser	12,290	7,300	17,830
411	Public Works	79,815	72,222	84,022
511	Public Health	348,659	211,127	506,749
631	Public Library	19,956	19,210	34,995
661	S.F.U.S.D.	772	13	
691	Light, Heat and Power	210	24	5
697	Employees Retirement System	96,165	84,827	137,635
699	Health Service System	88,697	82,760	74,800
725	Airport	375	869	1,626
745	Water Dept.	180	0	22,846

Percent of county
budget for data
processing



WHAT PERCENT OF COUNTY BUDGETS WAS SPENT ON DATA PROCESSING?
1962-1969

MILLIONS OF
DOLLARS



Total Welfare Benefits
Paid between 1960 and 1970

GROWTH OF DATA PROCESSING SERVICES

THOUSANDS OF
WARRANTS

200

175

150

125

100

75

50

25

0

JUNE
1967

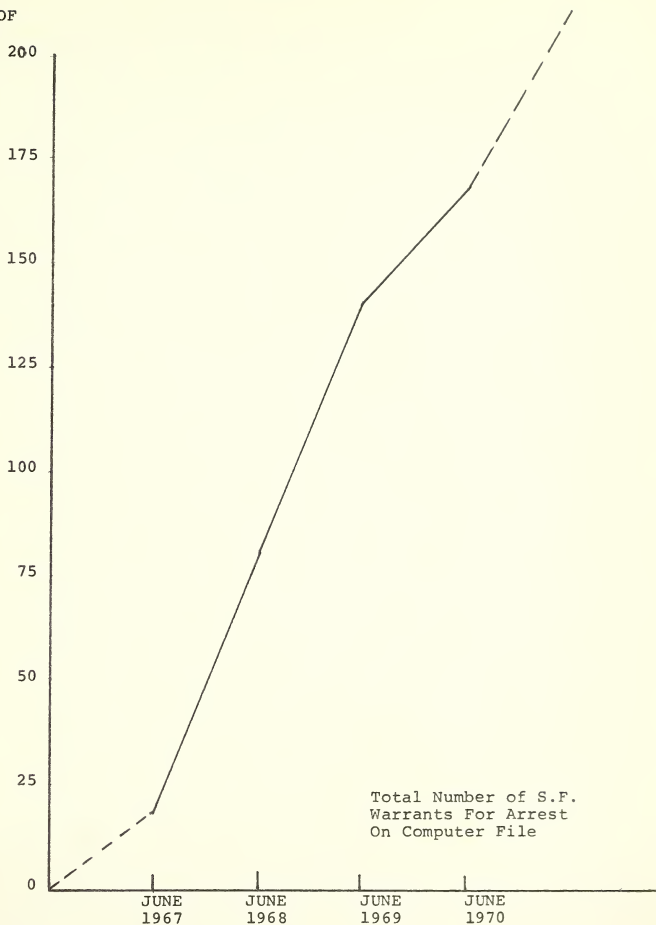
JUNE
1968

JUNE
1969

JUNE
1970

Total Number of S.F.
Warrants For Arrest
On Computer File

GROWTH OF DATA PROCESSING SERVICES





RESOURCES

PERSONNEL

EQUIPMENT - CURRENT

EQUIPMENT - FUTURE

DATA STORAGE

COMPUTER PROGRAMS

OTHER ASSISTANCE

RESOURCES

PERSONNEL

"Hardly an election goes by these days that one doesn't read in the newspapers of a breakdown in the vote-tallying process due to computer failure. Close reading of these reports almost invariably reveals that it was not the computer per se which failed. Rather, it was the people "feeding" the computers who erred-by using the wrong program, by scrambling or losing part of the input, or by any of a host of other peculiarly human missteps. From the standpoint of the candidate anxiously awaiting the outcome of the election, the question of culpability is largely academic. The process failed and that's all there is to it. From the standpoint of the press, however, the matter of who was to blame is of paramount importance, and, for some perverse reason, it is the people who attend the computers who almost always take it in the neck.

"After reading enough such reports, one might reach the conclusion that computers would be a pretty good deal if it weren't for the incompetent people surrounding them. In fact, life might take a definite turn for the better if computers were allowed to run completely unattended, to repair themselves, to write programs for themselves, to reproduce themselves, to organize computer societies. "Such a world, of course, is not only unlikely (George Orwell notwithstanding), but also highly undesirable. Computers were created to serve mankind, and they will be effective in this capacity only as long as mankind takes a direct and active part in their care and development."---Data Processing Digest October 1970



It is important to focus attention on San Francisco's data processing personnel, not only because they represent 43 percent of the total data processing expenditures, but because the value of the information generated via electronic means is directly proportionate to the creativity and imagination of these people.

The present staff of the Data Processing Department is composed of 267 persons functioning as follows:

- 1 Director
- 1 Assistant Director
- 6 Chiefs of Systems
- 4 Accountants or Administrative Assistants
- 4 Secretarial and Clerk-Typists
- 71 Systems Analysts and Programmers
- 31 Computer Operators and Shift Supervisors
- 38 Operations Support Personnel
- 20 Operations Control Clerks
- 61 Keypunch and input operators at City Hall
- 11 Keypunch Operators at Social Service Department
- 19 Keypunch Operators at Hall of Justice

267

About 180 of these people are in operations, which is staffed 24 hours a day, 7 days a week, requiring a somewhat larger complement than a conventional 5-day, 2-shift schedule.

Of 62 Systems and Programming Personnel, 26 of these men and women have bachelors degrees or higher and 32 have completed some college credits. Most have attended one or more formal classes in data processing and represent an average of three years of experience in the computer field.

Many of these people originally worked in other city departments and brought with them to data processing a wealth of experience about their areas. Of the original group of twenty city employees which formed EDP in 1961, twelve still remain, including the Director and Assistant Director.

However, the city and the data processing industry are faced with a most challenging problem in the area of staffing because the demand for skilled personnel greatly exceeds the supply.

In the past 24 months, thirty eight employees employed and trained in programming by the city have left for other employment with higher rates of pay and greater security.

For eight years, the entire systems, programming, and computer operating staff has been serving under limited tenure appointment without recognition, without employee fringe benefits, without retirement and without social security. The situation has now become acute.

Recruiting programmer trainees is not difficult. They are attracted by the sophistication of the equipment and by a higher than average starting salary. They undergo a training program to keep abreast of the newest technological advances in this field. Several methods are being used from self-study instruction books, VAI video-tape instruction courses conducted regularly at 240 Van Ness, formal fee courses at IBM, and other vendors' locations, and specialized courses taught on-site by instructors with special skills.

Retaining these people is another story. Even if they could advance, the next salary steps in Civil Service scale are substantially below other government and private industry. There are no merit salary adjustments to reward the "performers" such as used by the State of California, so after a short and happy life at City and County, they leave.

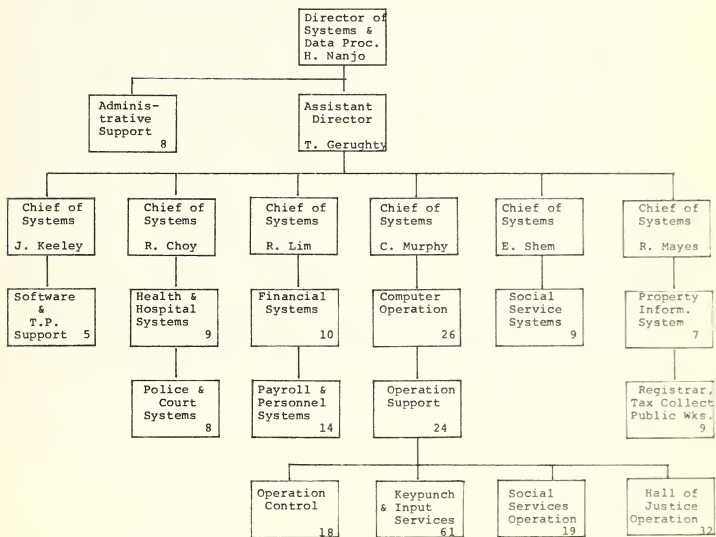
Recommended solutions to the "EDP People Problem" are as follows:

- . Develop long-range personnel plans or career paths for people.
- . Improve entire City's personnel motivation and productivity by making advancements attractive and using merit salary adjustments.
- . Establish Technical Service positions for highly-skilled employees (engineers, architects, physicians, programmers, etc.) using industry standards for selection, salaries, and permanent appointments until Civil Service positions can be structured. Other cities such as Cleveland and Chicago have done this successfully.
- . Step up recruiting by advertising or using employment agencies.
- . Make pay scale commensurate with private industry.
- . Set up formal job training program with budget to support it to permit hiring of unskilled trainee, to permit continuous development of existing staff and thus motivate them to stay, to make the city an attractive place to work, to increase productivity of present staff.
- . Make data processing positions PERMANENT.



CONTROLLER - DATA PROCESSING CENTER

ORGANIZATION CHART 1970-1971



Total Personnel - 267





A highly successful intensive two-day management training seminar was held in July 1970 to present the latest management techniques to the 25 supervisors in the data processing department.

DISTRIBUTION OF PROGRAMMERS AND SYSTEM ANALYSTS

BY CLASSIFICATION RANGES

JULY 1, 1970

<u>COUNTY</u>	<u>EMPLOYEE TOTAL</u>	<u>TRAINEE</u>	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>	<u>SUPVR.</u>
ALAMEDA	55	14%	22%	47%	-	-	17%
LOS ANGELES	254	1%	24%	29%	28%	15%	3%
ORANGE	52	-	50%	12%	38%	-	-
RIVERSIDE	70	-	28%	60%	4%	-	8%
SACRAMENTO	47	21%	32%	43%	-	-	4%
SAN DIEGO	63	5%	5%	63%	19%	-	8%
SAN FRANCISCO	66	2%	61%	21%	13%	-	3%
SANTA CLARA	39	4%	8%	51%	21%	13%	3%
<hr/>							
AVERAGES		2%	29%	33%	23%	7%	6%

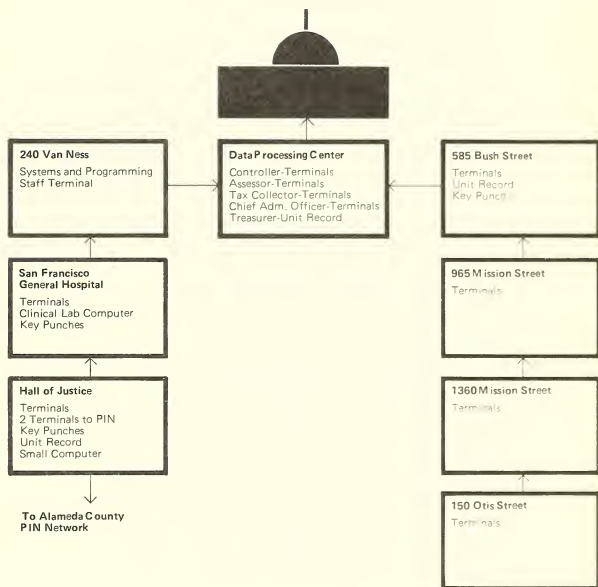
LIAISON WITH OTHER CITY DEPARTMENTS

In order to insure that each department in the City and County of San Francisco takes maximum advantage of the data processing facilities available to it, the position of E.D.P. Coordinator has been established within each major department.

The Coordinator provides the vital communication link conveying his department's requirements to data processing technical personnel and insuring that systems design and schedules are sound, workable, and acceptable.

Those departments with a knowledgeable, concerned Coordinator have been very successful in their use of data processing. To quote the most recent Grand Jury Report on one such department - "most all of the work in this department, that should be, is on data processing and having seen the full accomplishment of the end result it should be a model for the rest of the departments of the city".

Data Processing Locations linked via Teleprocessing Network



Other locations not on network

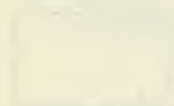
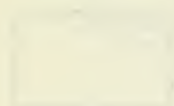
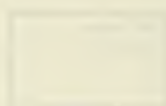
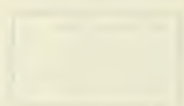
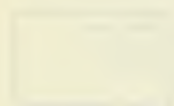
101 Grove Street
Key Punches
Unit Record

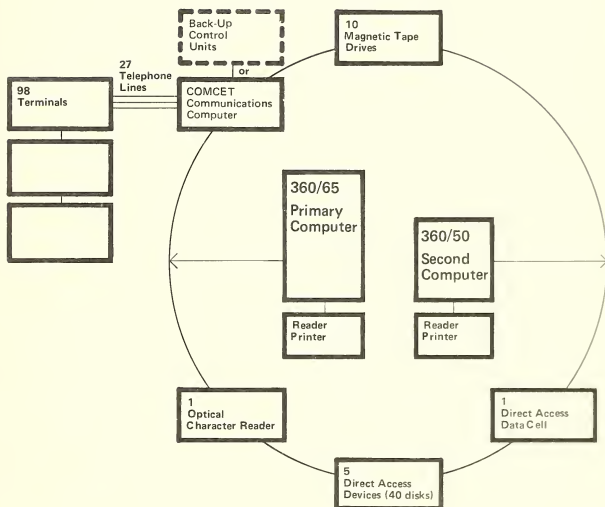
Port Authority Ferry Bldg.
Small Computer
Installation

Public Works
Time-Sharing
Terminals

San Francisco Unified School District
Intermediate
Computer
Installation

Public Utilities Commission
425 Mason Street
Intermediate
Computer
Installation





RESOURCES

EQUIPMENT

The computer hardware presently installed at the central facility in the basement of City Hall consists of an IBM 360 Model 65 with 512,000 positions of memory supplemented by an additional one million positions of auxiliary memory. This is the primary computer servicing a teleprocessing network of 100 terminals while simultaneously processing several other jobs (multi-programming). A secondary computer IBM 360 Model 50 with 128,000 positions of memory and one million positions of Ampex Auxiliary Memory handles additional batch jobs while serving as back-up for the teleprocessing network. It also has an emulation feature enabling it to run programs designed for the previously-installed 1410 system without the need to rewrite them.

These two computers have their own peripheral card-reading, punching, and printing devices but share a bank of ten magnetic tape drives and six direct access facilities making optimum use of these data storage devices at all times. In addition the optical character reader and the entire teleprocessing network may be switched to either computer in a few seconds.

Efficient operation of a teleprocessing network requires that the computer control all activity on the 27 telephone lines and 100 terminals attached. A special-purpose front-end computer Comcet 40 has been installed since summer of 1970 to monitor the lines and handle the messages to and from the terminals, passing them on to the primary computer for processing.

RESOURCES

EQUIPMENT (continued)

Prior to December 1970 two Model 50's were installed but as evidenced by the utilization graphs on subsequent pages the productive hourly usage had grown to 1100 hours per month or 76% of available time. To handle the steadily increasing requirement as well as improve the response time on terminal inquiries a Model 65 replaced one of the Model 50's.

Future plans of the Police Department, Courts, and others call for 50 more terminals to be attached to the system. The next major improvement planned is the installation of an IBM System 370 Model 155 in July 1971.

The Model 50 which it replaces will be moved to the Water Dept. at 425 Mason Street in preparation for a new water billing system capable of handling the recently-authorized sewer tax. Because of an ever-increasing data-base requirement, any improvements in the cost per character of direct access storage devices have a significant effect on the city's budget. It is, therefore, planned to install a new type of recently-announced storage device sometime during the spring of 1972, at which time the 360 Model 65 will be changed to a system 370 Model 155 for greater price performance.

Detailed listings of all equipment and locations are shown on subsequent pages of this section.



COMPUTER

Carlo Travaglini, shift supervisor, at the console of the 360/65 primary computer in the data processing center at Room 4, City Hall. Under control of its Operating System, it can be processing 15 different jobs simultaneously.

TOTAL HOURLY COMPUTER USAGE
BOTH MODEL 50'S

1969

1970

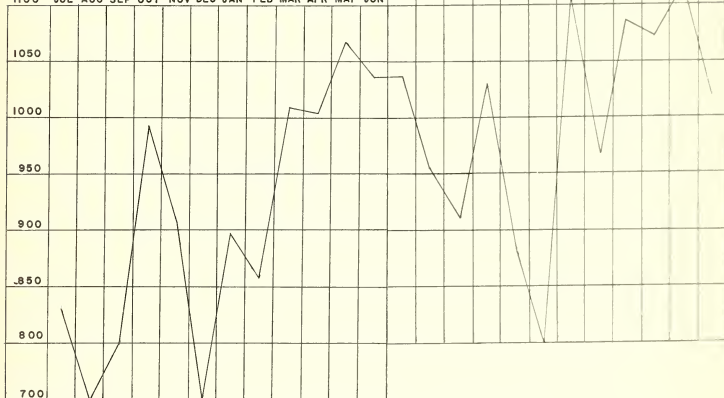
TOTAL HOURLY COMPUTER USAGE
BOTH MODEL 50'S

1968

1969

1100 JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN

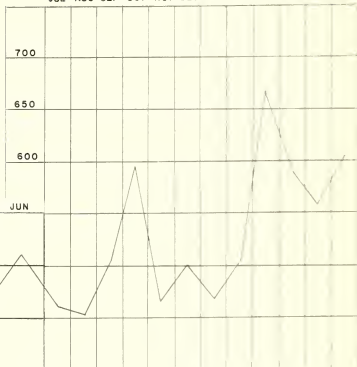
JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN



TOTAL HOURLY COMPUTER USAGE
BOTH MODEL 20'S

1969 1970

JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN



TOTAL HOURLY COMPUTER USAGE
BOTH MODEL 20'S

1968 1969
DEC JAN FEB MAR APR MAY JUN



EQUIPMENT FUTURE

[illegible]

RESOURCES

EQUIPMENT - CURRENT

COMPUTERS AS OF JANUARY 1, 1971

<u>VENDOR</u>	<u>MODEL</u>	<u>DESCRIPTION</u>	<u>NUMBER</u>	<u>LOCATION</u>
IBM	360/65	Large Computer System 512,000 memory position and	1	City Hall-Room 4
IBM	2361	1,000,000 added Large Core Storage	1	City Hall-Room 4
IBM	360/50	Intermediate Computer System 128,000memory positions	1	City Hall-Room 4
AMPEX		1,000,000 added Large Core Storage	1	City Hall-Room 4
COMCET	40	Computer-Communications	1	City Hall-Room 4
IBM	360/20	Small Computer System	2	City Hall-Room 65
IBM	360/20	" " "	1	Hall of Justice
PDP	12	Analog Laboratory Computer	1	San Francisco General Hospital

RESOURCES

EQUIPMENT

COMPUTER PERIPHERAL DEVICES

<u>VENDOR</u>	<u>MODEL</u>	<u>DESCRIPTION</u>	<u>NUMBER</u>	<u>LOCATION</u>
IBM	2314	Direct Access Storage Device	5	City Hall-Room 4
IBM	2321	"	1	"
IBM	3021	" Cells	10	"
IBM	2841	" Control Unit	1	"
IBM	2401-5	Magnetic Tape Drives	2	"
IBM	2420-5	"	8	"
IBM	2415-4	"	2	City Hall-Room 65
IBM	2415-1	"	1	Hall of Justice
IBM	2803-2	Magnetic Tape Control Unit	2	City Hall-Room 4
IBM	2816	Magnetic Tape Switch	1	"
IBM	1288	Optical Character Reader	1	City Hall-Room 4
IBM	2540	Card Reader - Punch	2	"
IBM	2560	"	2	" Room 65
IBM	2560	"	1	Hall of Justice
IBM	1403N1	Printer	2	City Hall-Room 4
IBM	1403N1	"	2	" Room 65
IBM	1403N1	"	1	Hall of Justice
IBM	2821-1	Control Unit	2	City Hall-Room 4
IBM	2701	Teleprocessing Line Control	4	City Hall-Room 4
IBM	2702	"	1	"
IBM	2711	"	1	"
IBM	2911	Switch for TP Lines	1	"

RESOURCES

EQUIPMENT - CURRENT

TERMINALS AND CONTROLS

<u>VENDOR</u>	<u>MODEL</u>	<u>DESCRIPTION</u>	<u>NUMBER</u>	<u>LOCATION</u>
BELL				
TEL.	ASR 33	Typewriter Terminal	1	450 Mc Allister- Public Works
SANDERS	708	Cathode Ray Terminal	11	S.F. Gen. Hospital
"	"	"	3	Hall of Justice- Police
"	"	"	16	965 Mission St.
IBM	1050	Typewriter Terminal	2	Hall of Justice- PIN
"	1053	Printer Terminal	1	585 Bush St.
"	"	"	1	1360 Mission St.
"	"	"	1	150 Otis St.
"	"	"	1	City Hall-Assessor
"	"	"	1	" Controller
"	"	"	1	Hall of Justice- Probation
IBM	2260	Cathode Ray Terminal	8	585 Bush St.
"	"	"	8	150 Otis St.
"	"	"	8	1360 Mission St.
"	"	"	5	City Hall-Control.
"	"	"	8	" Assessor
"	"	"	2	" Tax Coll.
"	"	"	2	" D.P. Admin.
"	"	"	2	" Room 4
"	"	"	1	" C.A.O.
IBM	2265	"	1	Hall of Justice- Probation
"	"	"	1	240 Van Ness
IBM	2740	Typewriter Terminal	5	Hall of Justice- Room 421
"	"	"	3	S.F. Gen. Hospital
"	"	"	2	965 Mission St.
"	"	"	2	City Hall-Tax Coll
"	"	"	1	" Controller
"	"	"	3	City Hall-Room 4
"	2741	"	2	Public Works
IBM	2848	CRT Terminal Control Unit	4	City Hall
"	"	"	1	585 Bush St.
"	"	"	1	150 Otis St.
"	"	"	1	1360 Mission St.

RESOURCES

EQUIPMENT - CURRENT

TERMINALS AND CONTROLS

<u>VENDOR</u>	<u>MODEL</u>	<u>DESCRIPTION</u>	<u>NUMBER</u>	<u>LOCATION</u>
SANDERS	701	CRT Terminal Control and Features	4	S.F. General Hosp.
"	"	"	1	Hall of Justice
"	"	"	7	965 Mission St.
"	731	"	1	City Hall-Room 4
"	2731	"	7	"
INT'L COMM.				
CORP.	220024	Milgo Modem for Commun. Line	18	City Hall-Room 4
"	"	"	1	240 Van Ness
"	"	"	2	Hall of Justice
"	"	"	1	585 Bush St.
"	"	"	3	965 Mission St.
"	"	"	1	1360 Mission St.
"	"	"	1	150 Otis St.
"	"	"	4	S.F. General Hosp.
"	110	Transmission Tester	2	City Hall-Room 4

RESOURCES

EQUIPMENT - CURRENT

DATA ENTRY EQUIPMENT

<u>VENDOR</u>	<u>MODEL</u>	<u>DESCRIPTION</u>	<u>NUMBER</u>	<u>LOCATION</u>
IBM	713	OCR Selectric Typewriters	4	City Hall-Room 65
"	"	"	3	" Assessor
"	"	"	8	" Tax Collector
"	"	"	1	" Controller
"	"	"	2	" Registrar
"	"	"	1	" Superior Ct.
"	"	"	4	Hall of Justice
"	"	"	1	150 Otis St.
"	"	"	1	Library
IBM	029	Card punch	1	City Hall-Room 4
"	029	"	21	" Room 65
"	026	"	3	" Controller
"	010	"	1	" Treasurer
"	026	"	1	" Superior Ct.
"	029	"	2	240 Van Ness
"	026	"	3	Hall of Justice-Ct
"	029	"	12	" "
"	026	"	9	" Police
"	029	"	2	" "
"	024	"	4	585 Bush St.
"	026	"	1	" "
"	029	"	1	" "
"	026	"	1	101 Grove St.
"	029	"	2	" "
"	026	"	3	S.F. Gen. Hospital
"	029	"	1	" "
"	029	"	1	Public Works-Eng.
IBM	056	Card Verifier	4	City Hall-Room 65
"	059	"	4	" "
"	059	"	1	Hall of Justice-Pol
"	056	"	3	585 Bush St.
"	056	"	1	101 Grove St.
"	056	"	3	S.F. Gen. Hospital
UNIVAC	1710	Card Punch	2	City Hall-Room 65
UNIVAC	1710	Card Punch	3	Hall of Justice

RESOURCES

EQUIPMENT - CURRENT

UNIT RECORD

<u>VENDOR</u>	<u>MODEL</u>	<u>DESCRIPTION</u>	<u>NUMBER</u>	<u>LOCATION</u>
MAI	082	Card Sorter	1	101 Grove St.
MAI	082	"	1	S.F. General Hosp.
IBM	083	"	1	101 Grove St.
MAI	083	"	1	585 Bush St.
MAI	083	"	2	City Hall-Room 65
MAI	083	"	1	" Treasurer
MAI	083	"	3	Hall of Justice
MAI	085	Card Collator	1	City Hall-Room 65
MAI	085	"	2	585 Bush St.
IBM	188	"	1	Hall of Justice
MAI	402	Accounting Machine	2	585 Bush St.
MAI	402	"	1	Hall of Justice
MAI	407	"	1	City Hall-Room 65
MAI	419	"	2	" Treasurer
MAI	514	Card Reproducing Punch	2	585 Bush St.
MAI	514	"	1	Hall of Justice
IBM	514	"	1	"
IBM	514	"	1	101 Grove St.
MAI	519	"	1	City Hall-Room 65
MAI	552	Card Interpreter	1	585 Bush St.
IBM	557	"	1	City Hall-Room 65
KYBE	E24	Tape Conditioner	1	City Hall-Room 65

RESOURCES

EQUIPMENT - CURRENT

OTHER LOCATIONS*

<u>VENDOR</u>	<u>MODEL</u>	<u>DESCRIPTION</u>	<u>NUMBER</u>	<u>LOCATION</u>
IBM	360/50	Intermediate Computer System 512,000 memory positions	1	S.F.Unified School Dist.
IBM	2415-2	Magnetic Tape Drives	4	
MEMOREX	2313	Direct Access Device (4 drives)	1	"
IBM	2540	Card Reader-Punch	1	"
"	1403 N1	Printer	1	"
"	2821-1	Control Unit	1	"
IBM	029	Card Punches	4	"
"	059	Card Verifiers	2	"
"	083	Card Sorter	1	"
"	085	Collator	1	"
"	514	Reproducing-punch	1	"
"	548	Interpreter	1	"

Various other Unit Record equipment in schools
for instructional purposes.

Schools

*This equipment is budgeted by San Francisco Unified School
District

RESOURCES

EQUIPMENT - CURRENT

OTHER LOCATIONS*

<u>VENDOR</u>	<u>MODEL</u>	<u>DESCRIPTION</u>	<u>NUMBER</u>	<u>LOCATION</u>
BURROUGHS	B500	Intermediate Computer	1	Public Utilities Commission 425 Mason St.
"	B421	Magnetic Tape Drives	5	"
"	B475	Direct Access Device	1	"
"	B471	" Control Unit	1	"
"	B304	Card Punch	1	"
"	B124	Card Reader	1	"
"	B325	Printer	1	"
IBM	360/20	Small Computer	1	"
"	2501	Card Reader	1	"
"	1443	Printer	1	"
"	2560	Multi-Function Card Machine	1	"
IBM	029	Card Punches	9	"
"	059	Card Verifiers	5	"
"	083	Card Sorter	2	"
"	088	Collator	1	"
"	557	Interpreter	1	"
"	514	Reproducing Punch	1	"

*This equipment is budgeted by the Water Department and Muni. Railway.

RESOURCES

EQUIPMENT - CURRENT

OTHER LOCATIONS*

<u>VENDOR</u>	<u>MODEL</u>	<u>DESCRIPTION</u>	<u>NUMBER</u>	<u>LOCATION</u>
SPERRY				
RAND	1005	Univac Small Computer with reader and printer	1	Port Authority Ferry Bldg.
"	Uniservo			
	6C	Magnetic Tape Drives	2	"
IBM	029	Card Punches	3	"
"	059	Card Verifier	1	"
"	083	Sorter	1	"
"	085	Collator	1	"

*This equipment is budgeted by the Port Authority.



DATA STORAGE DEVICES

Pictured above is a 2314 direct access storage facility which houses records used in the teleprocessing system. Any record is accessible in 75 milliseconds (thousandths of a second). Five of these are shared between the two computers at City Hall, Room 4.

RESOURCES

DIRECT ACCESS DEVICES

Direct access devices or disk packs of the type used by City and County are magnetically-coated disk surfaces with each pack capable of storing 29 million characters or pieces of information. Data is read or written to these devices while they are attached or 'on-line' to either of the two large computers. When the data is no longer required by active jobs, the packs are easily removed to a shelf for storage, until needed again, since the data remains intact.

Currently, the data processing installation has files and information stored on 88 of these packs, any 32 of which may be attached and jointly shared by the two computer systems at any given time. This will be increased to 40 in January.

The chart which follows shows a typical distribution of this file space during a normal day's operation.

Another type of direct access device called a Data Cell is also utilized primarily for Police and additional assessor's files. Its capacity is about 400 million characters of on-line data.

Assessor - 6
Social Service - 4
Hospital - 3
Budget-Appropriation-Voters - 3
Emulation - 3
Test and Work Space - 2
OS System - 2
Sorting - 2
Reading and Printing - 2
Teleprocessing Pages - 1
Civil Service - 1
Program Library - 1
Police - 1
Retirement - 1



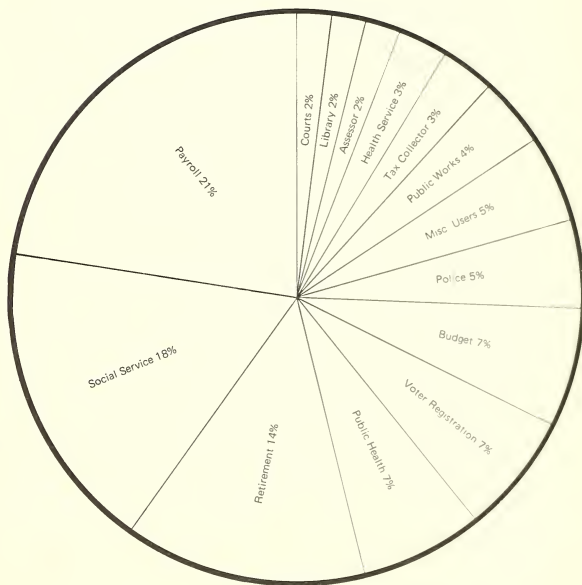
DATA STORAGE DEVICES

On the left above is a battery of newest model magnetic tape drives which read or write data at 160,000 characters per second. Ten of these are shared between the two computers at City Hall, Room 4.

RESOURCES

MAGNETIC TAPE

Reels of coated one inch mylar tape which can be magnetically encoded with data are also used for the storage of information. Since the data can be densely recorded (1600 bits per inch), one 2400 foot reel can hold 235,000 100-character records--more than the contents of four filing cabinets full of punched cards. The tape library of the city currently contains over 3100 reels of tape distributed among the departments as shown on the following chart. It is an ideal media for storing large masses of historical data because it is relatively inexpensive, data is permanently recorded, it can be copied, mailed, stored in other locations for security back-up purposes, and when finished the tape may be reused by writing new data on top of the old.



Distribution of 3,150 reels by application

RESOURCES

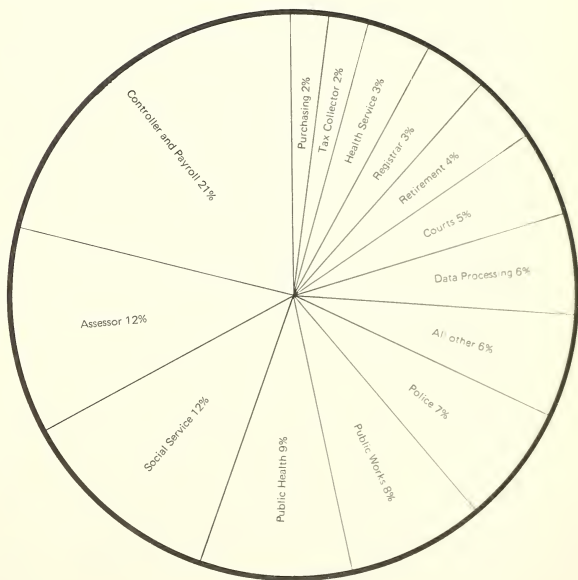
PROGRAMS

A computer program is a set of instructions written by a person (programmer) and placed in the memory of a computer to direct it to perform a given job one step at a time. Computers understand only their native or machine language which usually consists of a series of numbers which cause the hardware circuits to react. It is, therefore, normal practice to write a program in some language which men understand (COBOL, FORTRAN, ADPAC, etc.) and have the computer translate this into the language which it understands. The program is then tested to make certain that the results are correct.

Once written and tested the program is stored in a library (in cards, tape, or direct access). Each time that specific job is to be performed, the program which handles it must be placed (loaded) into the memory of the computer.

The program library of the city consist of 2200 programs written over the past 4 years and represents a vast resource in the ability to perform 2200 different jobs.

Other programs supplied by manufacturers and software firms are also utilized to complete the data processing function. A list of these is shown.



Distribution of 2200 programs by application

RESOURCES

COMPUTER PROGRAMS

MANUFACTURER - SUPPLIED OR PURCHASED SOFTWARE

ADMATCH	A program to match street addresses with desired geographic code structures.	Cooperative Exchange
ADPAC	A programming language using abbreviated coding instructions to produce computer programs.	Leased
ALC	Assembly Language Coding - A symbolic programming language which takes advantage of IBM 360 hardware capabilities.	MFG-Supplied
AUTOFLOW	A program which produces or draws flow charts from source language computer statements to give a schematic representation of the logic of a program.	Leased
BCS	Basic Court System - A complete set of pre-written programs (a package) for establishing on-line court procedures.	Leased
CABLE	Computer Assisted Bay Area Law Enforcement A group of programs (package) tailored for law enforcement teleprocessing applications.	Purchased
COBOL	Common Business-Oriented Language - An English language programming system which allows words and phrases to be used in constructing computer application programs. The most widely used commercial language.	MFG-Supplied
DIME	A program to facilitate creation of maps for analytical purposes.	Cooperative Exchange
FASTER	File And Source Data Entry Technique For Easy Retrieval - A general purpose teleprocessing monitor system to allow the user to create files and extract data from them to terminals in any desired format. Inquiries are written in a special high-level language peculiar to this system. Multi-faster is an adaptation of the original to permit simultaneous processing of several inquiries.	* MFG Purchase

*MFG - Supplied but highly modified on a purchase agreement.

RESOURCES

COMPUTER PROGRAMS

MANUFACTURER - SUPPLIED OR PURCHASED SOFTWARE (continued)

FORTTRAN	Formula Translation Language - A programming language which follows mathematical conventions. Problems are stated in formula fashion. Widely used in scientific, engineering, and mathematical applications.	MFG Supplied
OSMFT II	Operating System Multi-programming with Fixed Number of Tasks - Is the highly-sophisticated control program which resides in the IBM 360 computer's memory at all times and directs all other functions.	MFG Supplied
RPG	Report Program Generator - A programming language using abbreviated coding instructions to produce computer programs. Usually used for smaller computers or for extracting printed output reports.	MFG Supplied
SHAS	Shared Hospital Automated System - A set of pre-written programs (package) for handling Hospital Accounting and Billing.	May be Leased
XEROX	A program to perform Job Accounting for computer time usage.	Complimentary

RESOURCES

PROFESSIONAL CONSULTANTS AND SERVICES UTILIZED

<u>CONTRACTOR</u>	<u>DESCRIPTION OF SERVICE</u>
Adpac Computing Language Corp.	Lease of ADPAC Programming Language
Advanced Systems, Inc.	Video tape courses for programmer training.
Ampex Corporation	Bulk core storage device lease
Applied Data Research, Inc.	Lease of autoflow computer documentation programs
Arthur Andersen, Inc.	Airport project control
Automated Health Systems, Inc.	Facilities Management contract for hospital laboratory system
Blyth-Zellerbach Committee	Data Processing Survey 1961
Burroughs Corporation	Equipment lease at Water Dept.
California Counties - Alameda, Fresno, Marin, Sacramento and others	Mutual exchange of programs and services
CTC Computer Corporation	Outpatient billing for San Francisco General Hospital
Comcet Inc.	Equipment lease
Computer Sciences Corporation	Purchase of CSC software system for job accounting
Computer Time Sharing Corp.	Convert social service programs from 1410 autocoder to 360 COBOL
Computer Usage Development Corp.	Design of San Francisco Public Library Serials System Programs of Assessor's Valuation Project
Control Data Corp.	Equipment lease
Control System Industries	Hydrologic data acquisition system

RESOURCES

PROFESSIONAL CONSULTANTS AND SERVICES UTILIZED (continued)

<u>CONTRACTOR</u>	<u>DESCRIPTION OF SERVICE</u>
Data Processing and Accounting Services	Peak load key punching
Fair, Isaac and Company, Inc.	Design and installation of Water Dept. utility billing system
John F. Forbes and Company	EDP Survey 1965
I.B.M. Corporation	Equipment lease Program Products Systems Engineering Services Field Engineering Services Design and Implementation IPSS Education Courses
Information System Design, Inc.	Scheduling, registration, S.F. Unified School District
International Communications Corp.	Equipment lease
Kybe Corporation	Equipment lease
Lybrand Ross Bros. & Montgomery	EDP Survey 1965
MAI Equipment Corporation	Equipment lease
Marshall and Stevens Inc.	Equipment inventory - Health Dept.
Massey Data Service	Peakload key punch
Minnesota Mining & Mfg. Co.	Equipment lease
National Cash Register Company	Mental Health billing system
Optimum Systems, Inc.	Law enforcement programs for Police Department
Pacific Telephone & Telegraph	Equipment lease
Pro Key punch Services, Inc.	Peak load key punching
Sanders Inc.	Terminals and control units lease

RESOURCES

PROFESSIONAL CONSULTANTS AND SERVICES UTILIZED (continued)

<u>CONTRACTOR</u>	<u>DESCRIPTION OF SERVICE</u>
Service Bureau Corporation	Time Sharing terminal services
Synectics	Computer measurement program
Systems Development Services	Health Department laboratory feasibility study
System Dynamics, Inc.	Teleprocessing monitor system "Multi-faster"
Systems Science Development Corporation	Contract for law enforcement system
Task Force - Division of Statistical Tabulating Corp.	Peak load key punching
Touche Ross and Company	Study of EDP
Tymshare Incorporated	Time Sharing terminal services
Universal Computer Techniques Incorporated	Peak load key punching
Univac Division Sperry Rand Corporation	Equipment lease at Port Authority and key punches
Viatron Programming, Inc.	Analysis and design for Retirement System
Xerox Corporation	Job accounting routines
Other individuals	As required for special projects

RESOURCES

ASSOCIATIONS

San Francisco data processing management takes an active part in many professional organizations. The principal groups are described below.

CDP California Association of County Data Processors is comprised of one voting delegate from each county. Meetings are held twice a year. The objectives are:

- . To establish, implement and promote means of exchanging information in all aspects concerning data processing.
- . To assume leadership in inter-government data processing and county information system.
- . To provide a means of promoting professional growth.
- . To significantly contribute toward the improvement of the administration of county government for the benefit of the general public.

San Francisco personnel have held office in this organization.

CSAC County Supervisors Association of California consists of supervision from each county in California. A paid staff is maintained in Sacramento to service standing committees in every aspect of county government. CSAC is vitally interested in data processing since it too touches each aspect of county government, and utilizes county data processors association in an advisory capacity.

RESEARCH

ASSOCIATIONS (continued)

EARF Electronics Application Research Forum is a data processing users group composed of computer users in the Bay Area who meet to discuss mutual problems and solutions. They recently distributed an equipment survey compiled from their members.

IBEDP Intergovernmental Board on Electronic Data Processing was appointed by Governor Reagan to standardize the use of data processing on a statewide basis. It includes state departments, school districts, and county governments, and is essentially an EDP policy committee. It has published a criteria of data processing standards, makes recommendations on grants and has established a Technical Advisory Committee (TAC) of volunteer data processing managers. Monthly meetings are held in Sacramento with an agenda published in advance.

MIX Metropolitan Information Exchange is an association of fifty data processing executives representing the major cities in the United States, who meet annually to discuss potential uses of data processing. They keep abreast of developments across the country in the local government field through a monthly newsletter.

SCAA Society of County Auditors and Appraisers is a statewide association of California county officials to which many San Francisco employees belong. A presentation on the city's teleprocessing system was made to their annual convention in September 1970 by two members of the data processing staff.

FACILITIES MANAGEMENT

AN EVALUATION OF 'FACILITIES MANAGEMENT' OF COMPUTER OPERATIONS

The Controller's Department of the City and County of San Francisco is continually evaluating its data processing operations to assure the most efficient and effective use of computers and the application of their capabilities wherever appropriate in order to provide maximum service to the taxpayers. A part of this evaluation concerns the assessment of all external as well as internal resources available to perform data processing services.

One of the more recent developments in this field has been the emergence of what has been described as 'facilities managers' and 'facilities management companies'. An executive of one such concern has defined its function as the assumption of total computer responsibility, including the design, development, implementation, operation and management of all data processing function for its clients. A stated objective of this firm is to make itself totally responsible for the results obtained from a client's data processing operations and responsible to the client's top management for obtaining those results. Although not all such firms would insist upon such complete control, the basic concept of facility management is to combine a number of established EDP services such as consulting, programming, and service bureau work. Among the advantages claimed by those proposing facilities management contracts are the following:

1. Cost Savings and/or Cost Stabilization

There are three areas in which a facility manager can apply cost savings or stabilization--hardware, software, and computer operations.

Possibilities for hardware savings include a system downgrade where excess computer capacity exists, upgrading several users to a single large scale system, or replacing systems with terminals. None of these alternatives appear to be applicable to the City of San Francisco. The possibilities for direct software savings are minimal. However, resystematizing a set of programs or introducing checkpoints and controls can have a favorable impact on computer operations. The facility manager will therefore spend money on software so that he can achieve savings in operations; consequently, he requires a long-term contract to achieve profitability. It is in computer operations that the facility manager must look for his big savings, and the key ingredient here is the quality of operations management.

2. Improvement in Results

This can occur in both capability and/or computer operations (report processing, turnaround time, responsiveness, equipment utilization, etc.).

An improvement in capability, especially one which requires large numbers of skilled people for short time intervals, can be provided by a facility manager, a software house, or an EDP consultant. The user, however, must be able to define his needs and manage the contractor during implementation. Failing this, improved results are unlikely.

An improvement in computer operations is more of a management problem than a technical one and any consideration of facility management automatically brings with it the additional requirement to administer or manage the facility manager.

3. Removal of the Personnel Problem

This may be illusory except in small EDP installations, for frequently the personnel problems of the vendor become the personnel problems of the user. The facility manager faces turnover, promotions, training, the need to stimulate and move his good people, and the problems of vacation and sickness just as any other employer does. In addition, the user must continually train the new contractor people in his methods of operation and he must have the knowledge to evaluate the professional qualifications of facilities management personnel. It will, however, diminish the problems of hiring, firing, promoting, and salary structure; problems which are of significant importance in the City of San Francisco. If specialized skills are required on an as-needed basis, these can be obtained from a wide variety of sources without the necessity of entering into a long-term, full responsibility contract.

4. Free Executive Time for More Effective Management

If EDP is an unimportant factor in an organization, it will receive little executive attention. If EDP is a significant factor, it should receive its proportionate amount of executive attention and the entrance of a facility manager will not decrease this. Time requirements may actually increase because the executive must manage EDP and EDP change through a structured contract requiring familiarity. The results achieved through facility management are likely to be as much a function of executive attention as they would be for any internal operation. There are additional areas which should be investigated and thoroughly evaluated before considering a facility management arrangement.

Contract negotiation and administration is difficult and requires a great deal of time and special skills. Escape and contingency clauses for both parties, responsibilities, schedules, data provision, financial adjustments, penalties for non-performance, etc., must all be part of a contract. If points are left out, the contract must be renegotiated. Since it is difficult to completely define any job, by the time the user has drawn up an adequate contract, he may have solved the problem.

If the facility management contract proves to be unsatisfactory the process is difficult and costly to reverse. The price of restaffing and gearing up to reassume EDP activity can easily wipe out potential savings in the basic contract. A facilities management contract changes the role of the user from that of DP management to EDP contract administration, thus presenting him with a new skill requirements--one which he may not be prepared to assume.

A loss of control and knowledge will usually occur when responsibility for all EDP operations is surrendered to an outsider. The user cannot normally expect the FM expert to give away trade secrets or train the user in his craft. The longer a facilities management contractor has control over the EDP operation, the less able will the user be to resume EDP responsibilities if dissatisfaction should arise. Concern has also been expressed over the possible legal ramifications of loss of control over records and processing systems. How well will record security be maintained by employees of an outside organization? How flexible and how quick to respond will the facilities

management company be to change in user requirements, since all changes will have to be renegotiated contractually? Will the facilities management firm use excess time on the computer for its own needs? Will the facilities manager generalize user programs so he can sell them elsewhere instead of tailoring them to specific user requirements? Errors arise in any undertaking--will facilities management personnel, who are normally more loyal to their own company than to the user, spend more time in assigning fault than in correcting errors? Loss of control and knowledge of EDP operations by the user can result in unsatisfactory answers to the above questions and can weaken his ability to effectively administer the contract.

In conclusion, we do not feel that consideration of a facilities management contract is appropriate at this time for the City and County of San Francisco. Although there has been some apparent success with computer installations in federal government operations, insurance companies, banking and medical services, there is little experience in the application of the concept of facilities management to government service centers such as the one operated by this office for the City of San Francisco.

We do intend to continue to utilize outside resources providing data processing services and will contract for specific projects which are beyond the limits of internal capabilities. At the present time such contracts are in progress with five different firms to provide all or parts of:

- A computerized information system for the Police Department;

- A courts administration system;

- An out-patient billing system for the General Hospital;

A hospital clinical laboratory system; and

An improved teleprocessing monitor.

This evaluation has served to again emphasize the importance of the data processing department and its continuing growth in providing vital information and services to an increasing number of City departments. The inevitable problems and uncertainties associated with such a complex and dynamic enterprise must never discourage us from attempting to realize the unquestioned benefits available with current computer systems. Above all we must never abdicate our responsibility for management of this part of the City's business to any outside concern, but rather must continue to strengthen the data processing department and its management in order to assure the most efficient internal operation and the most effective management of outside contractors.



